

Chemical Week

January 7, 1956

Price 35 cents



Congress reconvenes this week; its decisions will have sharp impact on industry p. 18

► Central Canada's combination of oil and agriculture spells opportunity for process firms . . . p. 27

Target: effective herbicide for wild oats—costliest pest on many farms p. 38

► On the road ahead: freight increases on both rail and truck shipments p. 60

Climbing chlorine output will hit 4.3 million tons/year in another five years p. 73



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Photo courtesy Cotan Division, Interchemical Corporation, Newark, N. J.

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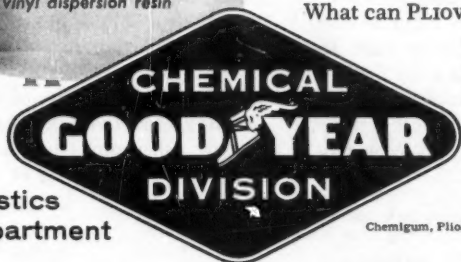
The scene above illustrates a new, momentum-gathering field of application for vinyl resins—the fast-growing trend from wallpaper to "wall-plastic."

The material being shown is *Cohyde*—a plastic coated fabric which through its three-dimensional beauty and durability is outstanding as a wall covering. And it is made with a plastisol based on **PLIOVIC AO**—the Goodyear vinyl resin especially designed for use in dispersions.

PLIOVIC AO is used in this premium-quality covering because it can be processed at relatively low temperatures. This in turn, affords greater uniformity and better physical properties in the end product, by virtue of a shorter heat history.

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Cohyde—T. M. Interchemical Corporation, New York, N. Y.



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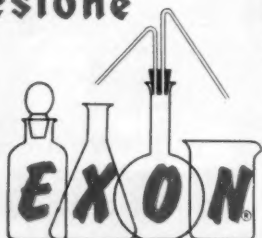
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January 7, 1956

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Chemical Week

TOP OF THE WEEK

As Congress reconvenes, there are many issues that will affect the chemical process industriesp. 18

... But that's not all. State legislatures are also meeting, taking up such thorny topics as water supply, pollution control, taxes on industryp. 19

Now there's a new trick with systemic insecticides: applying them to seeds, protecting young sprouts for several weeksp. 42

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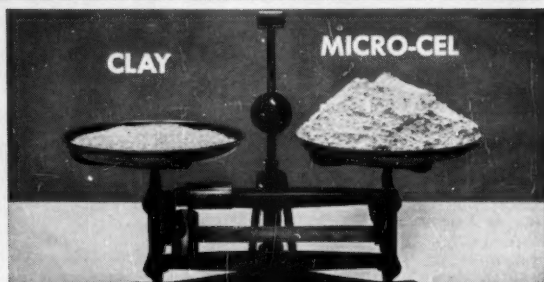
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THE BUSINESS MAGAZINE OF THE CHEMICAL PROCESS INDUSTRIES

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Moisture (free), wt. %	5-8
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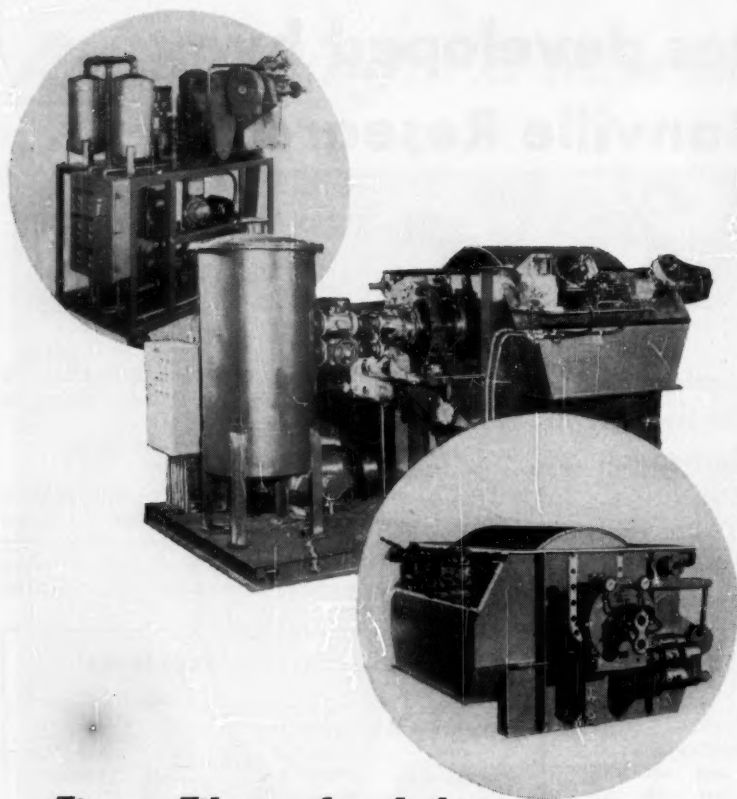
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OPINION . . .

Cooperative Project

TO THE EDITOR: I have seen the news article . . . from your Dec. 10 issue . . . with reference to the control structures planned for the Mississippi River.

As you no doubt know, Louisiana's Dept. of Public Works has been working closely with the U. S. Engineers on this project, and for their information I am taking the liberty of passing my copy along to Mr. Calvin T. Watts, director of the department. I know that he will find it of interest . . .

ROBERT F. KENNON
Governor
State of Louisiana
Baton Rouge, La.

Another Story

TO THE EDITOR: Your rare metals article (Dec. 24) was most interesting if somewhat incomplete. What, for example, happened to thorium, a metal that may still rightfully be classed as rare, despite the widespread attention it is getting in atomic energy work? Also, I feel that some mention of hafnium's atomic energy uses would have been in order.

GEORGE REPOULSKY
Minneapolis

Good points. Metals used in atomic energy work really rate a separate story.—ED.

No Simple Solution

TO THE EDITOR: Certainly the efforts of companies like Shell in granting fellowships to high school science teachers (Dec. 24, p. 24) are commendable attempts to relieve the technical manpower shortage. But I, like many practicing engineers, feel that a much quicker solution is obvious: better salaries for everyone, not just for recent graduates. No doubt you have heard this many times, but I don't think it can be repeated too often.

CW welcomes expressions of opinion from readers. The only requirements: that they be pertinent, as brief as possible.

Address all correspondence to: W. A. Jordan, Chemical Week, 330 W. 42nd St., New York 36, N.Y.



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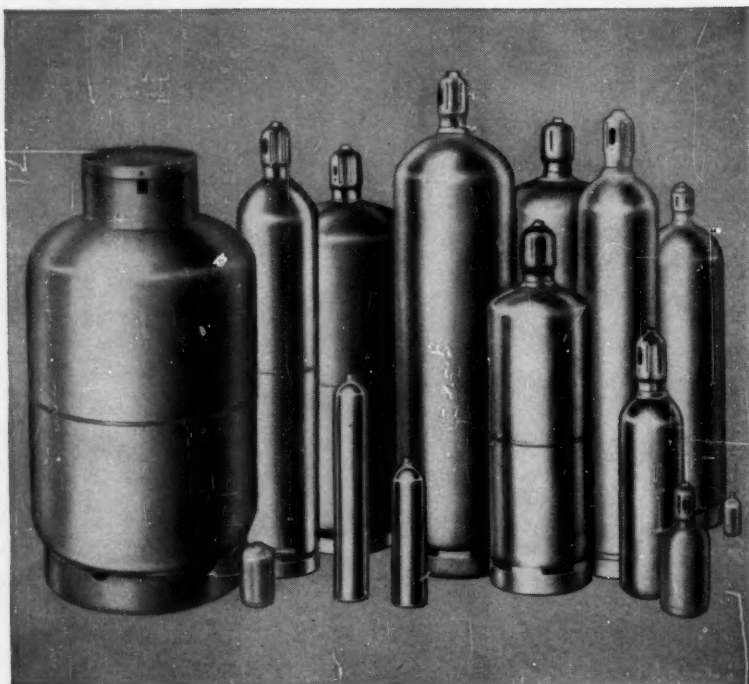
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January 7, 1956 • Chemical Week



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CONTAINERS AND PRESSURE VESSELS FOR GASES, LIQUIDS AND SOLIDS

OPINION

So let me add my voice to what I hope is a growing clamor.

NAME WITHHELD

There is no single, simple solution. Such approaches as Shell's attempt to heighten student interest in science (by providing better teachers) are important as long-range security.—ED.

'Authoritative'

TO THE EDITOR: I have seen your . . . "HF: Hot Field for Marketers" news feature (Dec. 10) . . .

It certainly was read with a lot of interest by our "Kinetic" Chemicals Division and, . . . as always, this piece was a complete and authoritative one.

F. R. ZUMBRO

E. I. du Pont de Nemours & Co., Inc.
Wilmington, Del.

SEE YOU THERE

Synthetic Organic Chemical Manufacturers Assn., luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, Jan. 10.

Industrial Mobilization Planning, New England meeting, Hotel Bradford, Boston, Jan. 10.

Plant Maintenance & Engineering Show, Convention Hall, Philadelphia, Jan. 23-26.

International Astronomical Society, annual meeting, including sessions on rocket propulsion, Hotel Astor, New York, Jan. 23-26.

Assn. of American Soap and Glycerine Producers, annual convention, Waldorf-Astoria, New York, Jan. 25-27.

American Society for Engineering Education, College-Industry Conference of Relations with Industry Division, Marquette University, Milwaukee, Jan. 26.

Chemical and Allied Products Buyers Group of National Assn. of Purchasing Agents, Midwestern meeting, Palmer House, Chicago, Jan. 24; Eastern meeting, Commodore Hotel, New York, Jan. 31.

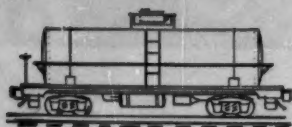
Chemical Market Research Assn., aromatic chemicals meeting, Webster Hall, Pittsburgh, Jan. 31-Feb. 1.

American Coke & Coal Chemicals Institute, Western regional meeting, Drake Hotel, Chicago, Feb. 2.

Synthetic Organic Chemical Manufacturers Assn., luncheon, Palm Terrace Suite, Hotel Roosevelt, New York, Feb. 7.

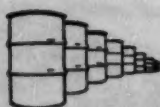
Technical Assn. of Pulp and Paper Industry, annual meeting, Commodore Hotel, New York, Feb. 20-23.

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manufacture; and plasticizers for plastics. They also find application in the leather and paper industries and have excellent possibilities for uses in other industries.

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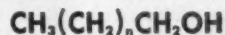
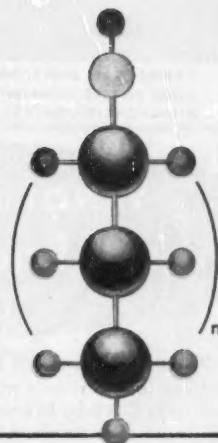
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What every chemist should know about sorbitol

Sorbitol's "pedigree" is a tip-off to the rapid growth of this material's usage in industry. Atlas makes it by hydrogenating glucose, as shown on the chart below. It is a low-cost, six-carbon, straight chain hexahydric alcohol, $C_6H_{14}(OH)_6$, belonging to the *polyol* family, of which glycerin is the *trihydric* member. Sorbitol is a natural ingredient of many fruits and plants. In the pure state it is a white, odorless, crystalline solid with a faint, sweet, cool taste, and soluble in water. It is usually supplied in its most economical form, Sorbo®, a 70% aqueous solution.

As you might guess from sorbitol's high molecular weight (182.1), its solutions are much more viscous than those of glycerin or the glycols; it's stable either dry or in solution—unaffected by dilute acids or alkalis; and slower to gain or lose moisture content.

Various industries take advantage of different properties of sorbitol. For example, sorbitol is used as:



A humectant for cosmetics. Being non-volatile, sorbitol gives permanent protection to face creams and dental creams against drying out, preserves their texture even when water is lost. Facilitates smooth application of creams and gives pleasant "feel" on the skin.



A bodying agent for liquid pharmaceuticals. The high viscosity of sorbitol solutions, inertness toward most medi-

cinals, good taste and economy make sorbitol ideal for bodying syrups, elixirs, and mouth washes, for example. Helps prevent crystallization of sugar or other solids from solution.



A starting material for paint resins. Sorbitol supplements glycerin and pentaerythritol in making alkyd resins, thus not only cutting down costs but also giving added control over drying time, hardness and adhesion.



A softener and flexibilizer for glue specialties. Used with or instead of other

polyols in printer's rollers, flexible glues and cork binders—sorbitol, because it is non-volatile, gives permanent plasticizing action, increases toughness and tensile strength, saves money. Also gives superior protection against humidity effects.

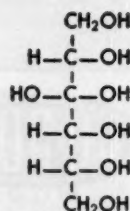
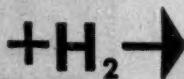
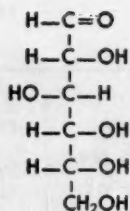


A wholesome ingredient for confections.

A "hydrogenated sugar," sorbitol improves keeping qualities and palatability of candy, marshmallow, shredded coconut, and icings, because of its moisture-conditioning properties and ability to inhibit sugar crystallization.

Sorbitol is available from Atlas either in crystalline form (powdered or pellets) or in 70% aqueous solution (N.F.) trade marked SORBO. Both these forms of sorbitol are recommended for foods, pharmaceuticals, and chemical synthesis.

Various non-crystallizing mixtures of sorbitol with its anhydrides and related polyols are available for industrial applications such as tobacco, glue compositions, etc., where increased resistance to crystallization is required.



Sugar (glucose)

Sorbitol

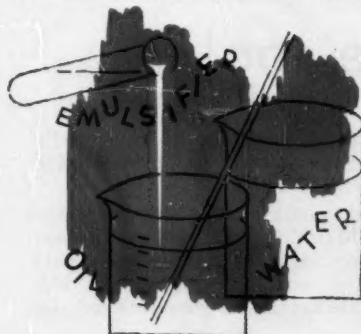
Atlas synthesizes sorbitol by hydrogenation of glucose. Formerly, sorbitol was available only in small quantities from fruits and berries, at high "laboratory curiosity" prices.

Tips to aid preparation of oil-in-water emulsions

Formulating emulsions is a tricky procedure, involving not only the choice of emulsifiers, but correct blending of them with other ingredients. Here are a few tips from our laboratory on emulsion preparation. Through long experience in assisting emulsifier users with their emulsification problems, we have found that these simple precautions frequently save time and give better emulsion products.

Emulsions containing fairly high concentrations of emulsifier are usually prepared best by first dispersing the emulsifier portion in the lesser phase of the emulsion, usually the oil phase when oil-in-water (O/W) emulsions are being considered. If a wax is used, it should be molten. The water is then added slowly to this mixture, with thorough agitation.

The resulting emulsion starts out as a water-in-oil type. As water is added, the emulsion increases in viscosity, due to the increased crowding of the water



Disperse emulsifier in oil phase first.

particles in the oil. The emulsion will suddenly thin out, indicating inversion from W/O to O/W. After the inversion point, water becomes the external phase, and the remaining water can be added

more rapidly. Inversion produces a finer particle size and therefore a more stable emulsion is likely to result.

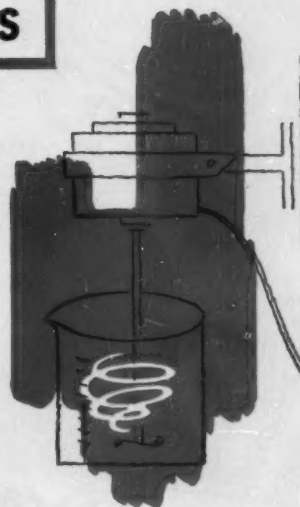
Blend emulsifiers first. Usually a combination of Atlas emulsifiers . . . one with high HLB (water-soluble) and one with low HLB (oil-soluble) . . . is recommended. At first glance, it might seem



Blend oil-soluble and water-soluble emulsifiers before adding to product.

easier to place the water-soluble emulsifier in the water phase, and the oil-soluble agent in the oil phase, then simply mix the phases. This method, however, would not provide the correct HLB until the mixing is complete. At the start of addition of water, the net HLB of emulsifier present would be far too low to get satisfactory emulsification. Both portions of the blend should be dispersed first in the oil phase, just as though a single emulsifier were used.

When low concentrations of emulsifiers are used, best results are obtained by adding the oil-emulsifier mixture to water to form a coarse emulsified "pre-mix." The final product is then produced by homogenization . . . the extra work



Greater agitation is needed when amount of emulsifier is limited.

being necessary to perform some of the dispersion mechanically because a limited amount of emulsifier is present. Another way of making sure to get top results is to choose your emulsifiers from the wide selection offered by Atlas. We'll be glad to send data on our line, and assist you in selection.

New Catalog Lists Atlas Organic Chemicals

Our latest "Atlas Organic Chemicals" catalog is just off the press, giving a condensed 8-page description of our main classes of chemical products. Included are: sorbitol, mannitol, and related polyols; Atlas surfactants (over 80 of our most popular ones); Atlac® polyester resins and Darco® activated carbons.

If you want one for your files to give you a quick glimpse at the "Atlas line," write us and ask for LG-44.

You need both to win!



KETONE LACQUER SOLVENTS

give you high quality,
and a price advantage, too!

In both nitrocellulose and vinyl lacquers, solvent systems based on ketones have many inherent advantages.

Ketones produce lacquers with superior characteristics, at no increase in cost of production, in almost any formulation. They will yield solutions of higher solids content, or permit greater diluent content with either aromatics or aliphatics.

Important, too—ketone-based solvent systems assure complete flexibility in formulating. You add

the latent solvents you prefer. And when you buy by the pound and sell by the gallon—the lower specific gravity of ketones favors you.

The Shell Chemical "quality group" of active solvents includes MEK, MIBK, and Ethyl Amyl Ketone, as well as latent solvents MIBC, IPA and Ethyl Alcohol. Your Shell Chemical representative will gladly help you evaluate ketones for your own lacquer formulations.

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Business

Newsletter

CHEMICAL WEEK

January 7, 1956

Up for the third time in Wall Street circles is the strong rumor that Smith-Douglass Co. (they make fertilizers in the South and Midwest) will merge with W. R. Grace & Co. If it goes through on a stock-trade basis, look for one share of Smith-Douglass common to be exchanged for three-quarters of a share of Grace.

Last year's power-curtailling drought apparently won't slack aluminum expansion in Quebec. Latest to reveal plans is Canadian British Aluminium Co., Ltd., a new Montreal-headquartered firm that's aiming at an ultimate ingot capacity of 160,000 tons/year.

Plant site is at Baie Comeau, Que., 250 miles northeast of Quebec City. First furnace is due onstream late in 1957; a second, slated to start up about a year and a half later, will put annual capacity at 80,000 tons. Third and fourth stages, needed to achieve total planned capacity, are still tentative.

This, despite Aluminium Co. of Canada's recent prediction of a 5% cutback in its 1956 aluminum production in Quebec (*CW Business Newsletter*, Dec. 10, '55). Alcan blames power shortages resulting from 1955's lack of water.

High hopes for a new process appear to be buoying trade in the stock of Jefferson Lake Sulfur Co. The company's Rotasorber process to take hydrocarbons out of well gas is approaching final tests after 15 months of pilot-plant evaluation. It's said to be less costly, more compact than other methods of doing the same job.

Anticipating doubled sales of its phthalocyanine pigments, Thomasset Colors, Inc., a leading independent producer, has just moved to its new Newark, N. J., plant. Thomasset's sales of these pigments have been running about 250,000 lbs./year, but should hit an annual rate of 500,000 lbs. by June.

Both quantity and product lines will be expanded. Phthalocyanine blue and its derivatives have been the firm's mainstay. Now, though, they'll also make phthalocyanine greens.

Though a pioneer in phthalocyanines (with Du Pont and General Aniline), Thomasset is not basic in raw materials, has been squeezed between rising costs and falling sales prices, particularly the 10% drop early last year.

Oil company profits are soaring. Indicative is Ashland Oil & Refining Co.'s just-issued annual report for fiscal 1955 (ended Sept. 30). Net income was \$10.1 million, up from \$6.63 million in fiscal '54—a whopping 52% jump.

Expansion plans are back in the news this week:

• Koppers will invest approximately \$25 million this year, the second of a five-year expansion program launched in 1955. About the same amount was spent by the firm last year in acquiring six companies, expanding and improving existing facilities. Among Koppers' corporate acquisitions were American Aniline Products (Lock Haven, Pa.), Turner & Haws Engineering (West Roxburgh, Mass.), Industrial Sound Control (Hartford, Conn.), and the Feather River plant of National Wood Treating Corp. (Oroville, Calif.).

• Phillips Chemical is boosting capacity of its Plains plant at Borger, Tex. Synthetic rubber capacity will be boosted by 30,000 long tons/year; butadiene capacity will be upped by 24,000 short tons/year.

Business Newsletter

(Continued)

- Pittsburgh Metallurgical will shortly embark on a \$1-million expansion of its Calvert City ferroalloys plant. Plans call for the installation of two big electric furnaces, a capacity boost of about 30%.

- Virginia-Carolina Chemical reportedly is putting up a small plant at Rochester, N. Y. V-C has long maintained sales and warehouse facilities in Rochester.

- British Chrome & Chemicals (Stockton-on-Tees, Eng.) has completed plans for expanding production of sodium bichromate and other chromium chemicals. According to the company, it will be a "large-scale" plant in the Hull, Eng., area.

Koppers' chemical division made a move this week to buttress its expansion into the textile dyestuff field. It is taking over distribution of dyestuffs made by Pittsburgh Coke and Chemical Co. Pittsburgh will now concentrate on fine chemical sales. The entire textile dyestuff sales force has been transferred to Koppers.

Thanks to chemicals, the first Armour & Co. dividend in years could be close at hand. Of reported earnings last year of \$2.79/share, \$2.50 represents income from nonfood products of which chemicals are by far the bulk.

Hercules threw its hat into the mono-pentaerythritol ring last week by making available what it calls "zero-ash" mono-PE. The product, alleged to be nearly free of inorganic impurities, is aimed at producers of core oils, synthetic drying oils, special alkyd resins, and certain polyesters. Mono-PE output at the firm's Mansfield, Mass., plant will—Hercules figures—increase the country's capacity of the chemical by 25%.

While the chemical industry in the U.S. has been advancing at a brisk canter, chemical concerns in Europe have been moving at a gallop, relatively speaking.

That's the word this week from the Chemical Products Committee of the Organization for European Economic Cooperation, which has just completed a country-by-country survey of chemical industries in western Europe. Average increase in chemical production in all OEEC nations was 15% in 1954 and probably about the same in '55, compared to a 9% rise in all-manufacturing output in those countries. In individual countries, chemical production climbed 39% in Greece, 22% in Italy, 21% in Norway, 16% in Germany and 15% in France.

Chemical prices in Europe have increased, but much more gradually than prices of other manufactured items, says OEEC. Member countries' chemical imports and exports mounted by 19%, but the committee feels that there's lots of room for further expansion of this trade.

BRIEFS

for buyers of

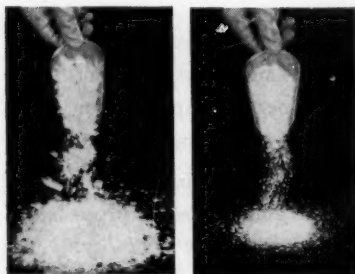
Caustic Soda
Aluminum Chloride
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He treats our caustic drums rough. A customer in the Pennsylvania oil fields made our salesman wince.

Said he likes our flake caustic soda drums, because they make it easy to distribute caustic in the field. He just shoves the drums off the tailgate of his truck, lets them bounce. He's been doing it for some time without handling losses.

We certainly don't advise this procedure, but it does provide a dramatic testimonial. Six lugs grip the lid of every drum of Hooker flake caustic soda—the best way we've found to keep the caustic dry and pure for your processing or repackaging.

The drum comes to you full of clean, uniform flakes—regular, fine, or crystal—or powdered caustic. The picture below demonstrates how dust-free the flakes are. The coupon offers a helpful booklet on buying caustic soda.

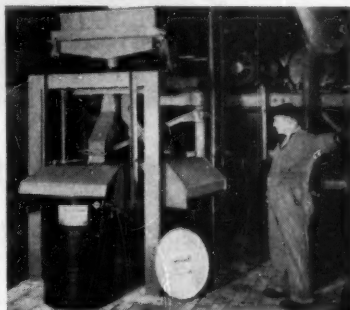


Why we air-condition our aluminum chloride. Even slightly humid air reacts swiftly with aluminum chloride. When it does, the crystals

of this sensitive chemical lose their shape, and most of their punch as catalysts.

We avoid such damage to our aluminum chloride by using a special packaging room that is air-conditioned. It gives us complete control over humidity. Regardless of outside weather conditions, we can package aluminum chloride all year 'round.

To you the room means a continuous, dependable supply of full-strength aluminum chloride. And you always get the size you want for your process.



Speaking of size, you have a choice of four from Hooker—extra fine, fine and coarse grinds, and coarse screened. Send the coupon for a data sheet that gives complete specifications on all four or write today on your business letterhead.

How to dry paint in 2 seconds.

Many paints, inks, and varnishes take from 24 hours to a week to dry thoroughly.

But pass them through sulfur dichloride vapor, and they dry before

your eyes—in from 2 to 20 seconds. This drying process works on paper, wood, cloth, metal, glass, plastics.

Maybe there's a place for super-fast drying in your company. If you think so, write us for the name of the process licensor.

Perhaps you're already using SCl_2 in a less glamorous but equally useful way. Whatever the need, you can answer it by specifying Hooker sulfur dichloride.

And if it's chlorination you're doing, you might be happy, to know we also make its versatile chemical cousins, sulfur monochloride, sulfuryl chloride, and thionyl chloride.

Sources we've checked indicate we're the only producers of all four of these chlorides. We'll be happy to provide (a) data sheets on any of them, if you'll check the coupon; (b) samples, if you'll just write on your letterhead outlining your needs.

Check items you'd like to receive:

- ☐ **Caustic Soda Buyer's Guide •**
A helpful pocket-size booklet full of information and pictures on forms and sizes; shipping methods and containers; the economics of 50% vs. 73% solutions (with nomograph to help decide which is your best buy); and technical service.

Keep your file up-to-date with technical data sheets on these Hooker chemicals:

- ☐ Aluminum chloride
- ☐ Caustic soda (standard grade)
- ☐ Caustic soda (rayon grade)
- ☐ Sulfur dichloride
- ☐ Sulfur monochloride
- ☐ Sulfuryl chloride
- ☐ Thionyl chloride

Clip and mail with your name, title, and address.



From the Salt of the Earth

HOOKER ELECTROCHEMICAL COMPANY

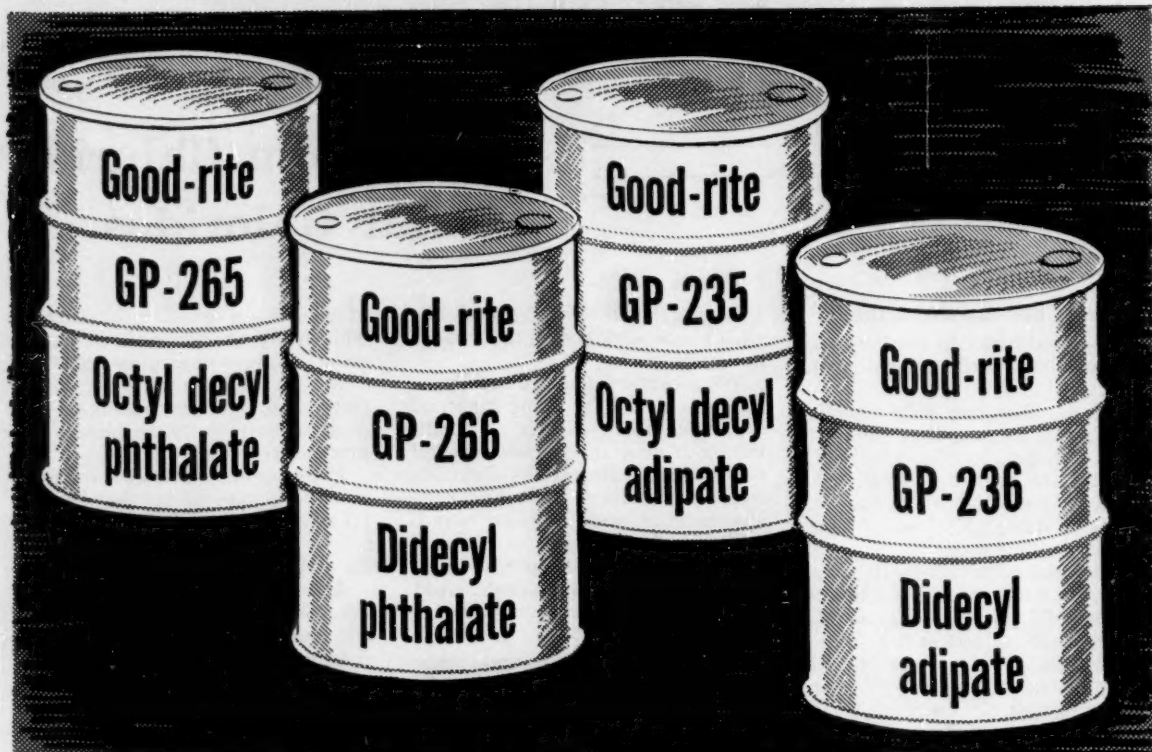
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News about

B. F. Goodrich Chemical raw materials



4 New Good-rite Plasticizers

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THESE new Good-rite Plasticizers, along with GP-233 and GP-261, give the vinyl compounder more effective tailoring of characteristics to meet end-use requirements.

At the same time, they have lower specific gravities, produce equivalent physical properties at higher ratios of plasticizer to resin—thus saving on raw material costs.

GP-265 and GP-266 have superior heat and light stability, low water extraction, excellent low temperature flexibility, freedom from odor

and color, and improved permanence characteristics. **GP-266** has extremely low volatility and excellent dielectric properties, important for high temperature wire and cable applications.

GP-235 and GP-236 are characterized by low volatility, high permanence, good dielectric properties, and excellent low temperature flexibility.

For technical literature, please write Dept. S-1, B. F. Goodrich Chemical Company, Rose Building, Cleveland 15, Ohio. Cable address: Goodchemco. In Canada: Kitchener, Ontario.



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BUSINESS & INDUSTRY . . .



SECRETARY WEEKS: For first half of 1956, he foresees . . .

WIDE WORLD

Still Brisker Chemical Sales

Chemical industry sales for the first half of this year are expected to beat the half-year record established in 1955.

So says Commerce Secretary Sinclair Weeks on the basis of information gathered by the Chemical and Rubber Division of the department's Business & Defense Services Administration.

Weeks' year-end statement on the over-all business outlook puts the chemical industry in line with the general trend—with business running either as good as last year, or better.

More Consumer Capacity: Sales of chemicals for the first six months should hit close to \$12 billion, compared with \$11.5 billion for the first half of last year. Total 1955 sales are estimated at \$23.3 billion. Weeks reports that, in general, the industry's customers have low inventories of raw materials as the year ends—and they'll be expanding their capacity during the year ahead.

Rubber industry sales operations are expected to be "not much below" the rate that came from 1955's record consumption of 1,515 million long tons of rubber. Supplies of both synthetic

and natural are expected to be somewhat easier this year.

New Records Foreseen: Pulp, paper and paperboard output is expected to keep on expanding above the rate that produced a record output of 29.5 million tons in 1955.

A further record is expected in the softwood plywood industry, which, in each of the past seven years, has had an all-time production high. For the first six months of '56, production should be 2.6 billion sq. ft.—13% above the same period last year.

Photographic material production and sales, this year, are anticipated at 7% above the '55 total, itself a record.

Coming into Focus

The shape of things to come in labor relations within the chemical process industries may well be determined at a pair of meetings coming up next month.

One is the AFL-CIO executive board meeting to be held in Miami, at which the newly merged federation will probably decide when, where, and how to launch the "tremendous organizing campaign" that its leaders

have been calling for. AFL-CIO Vice-President Walter Reuther has been repeating his conviction that first priority should be given to organizing in chemical plants, and his views are expected to carry considerable weight with board members—particularly on the subject of organizing.

Another possibly portentous meeting tentatively planned for next month: the first joint session of the two committees that are studying the proposed merger of two of the continent's three major chemical labor unions—Oil, Chemical & Atomic Workers and International Chemical Workers Union.

\$10 Million in Kitty: John Livingston—director of organization for the combined AFL-CIO—has revealed that his department's share of the new federation's initial operating budget may be close to \$10 million. With that much in the kitty, he's being commissioned to carry out "the biggest organizing drive in the history of American labor." How much of that allotment and of his staff's organizing efforts will be concentrated on the chemical industry may be decided at the meeting in Miami.

Regional organizing directors have been appointed to supervise recruiting drives in every part of the country. Of particular interest to chemical management: the work to be undertaken by these regional directors in the South, where unionizing has met with greatest resistance to date. Spearheading AFL-CIO organizing in Dixie will be Joseph Heath at Richmond, Carey Haighter and J. L. Rhodes at Atlanta, E. H. Williams at New Orleans, Paul Christopher at Knoxville.

Meanwhile, executives can get a hint of what's going on in OCAW from a recent speech by O. A. Knight, president of the union. OCAW—which has been operating in the red this year—should finance itself and not depend on others, Knight declared. In what might be a prelude to a request for increased membership dues, Knight told OCAW officials that the union should build up a reserve fund large enough to keep the union going for six months, plus an "adequate" defense fund.

These Are the Issues Directly Affecting Chemical Makers That Congress Must Decide This Session

FOREIGN TRADE AND TARIFFS

- Antidumping and import quotas will be proposed, but the only commodities that stand much chance of gaining them are textiles and raw cotton.
- The Customs Simplification bill passed by the House may get considerable revision by the Senate. President Eisenhower would like a three-year exemption from duty assessment on export value for a limited list of chemicals.
- The proposal that the U.S. join the Organization for Trade Cooperation (OTC) will probably be shelved for another year.

ALIEN PROPERTY

- The Administration bill, which would allow sale of General Aniline & Film Corp. before the conclusion of the current litigation over ownership, has the best chance of any proposal on alien property matters. There is, however, little probability of passage this year.

FOOD AND DRUG LAWS

- It's likely that a bill regulating use of chemical food additives will get through Congress—but only if industry comes up with a single proposal. Such a bill may also cover such unintentional additives as packaging materials.
- Some pressure will be exerted to authorize use on citrus of newly banned coal-tar colors. There is not much chance of enactment, though.

RUBBER DISPOSAL

- Approval of the sale of the Institute, W. Va., GR-S plant to Goodrich-Gulf will come about next Feb. 13, after considerable Democratic "business give-away" politicking.

WATER POLLUTION

- A bill allowing federal action against polluters at the request of a "downstream" state is likely to pass. Some type of action on this score must be taken before June 30 to prevent expiration of present pollution laws.

No Cause for Solace

In 1956, Congress will look to the interests of the voter, not to those of the chemical industry.

And with full legislative schedule on the books, you'll have to judge future Congressional action on issues of broad chemical importance (*see chart*) by how they affect the large mass of voters.

It's pretty sure, for example, that Congress won't allow corporation taxes to drop the scheduled 5% on April 1; any talk of tax relief will revolve around the question of how much of a cut—if any—should be given individuals.

On foreign trade, the only special concessions that might be granted are to the textile industry (import quotas on Japanese textiles) and to cotton growers (dumping of government-owned cotton in overseas markets). Here again, it's the effect on the voters that will point to the outcome.

Spokesmen and lobbyists from protectionists ranks are turning to quotas as a primary weapon in the foreign trade war.

Biggest support is for the bill by Sen. James Eastman (D., Miss.) to invoke quotas on raw cotton imports (*CW*, Dec. 10, '55, p. 20). But a wider

range of industries will be making more of it during the year. The American watch industry is joining in the battle, and domestic oil producers are seeking a quota system covering imports from the Middle East and Venezuela, etc.

Other agriculture, labor and industrial groups (including several chemical companies) are joining to put more pressure on Congress for quotas.

As for legislation that affects chemical manufacturers specifically, the chances of passage are also not too bright. Since this is an election year, legislators will try to wind up their work as early as possible this summer and get home for some politicking. (As one pundit put it, "The only thing a congressman wants more than to get elected is to get re-elected.")

Outlook: Legislation affecting chemicals depends on how quickly in new session the various committees can get to the various bills. There will be a reluctance to tackle any detailed measures on which there is any controversy. That may antagonize more voters than it pleases.

Take chemical additives in food, for example. There has never been an agreement on the subject among

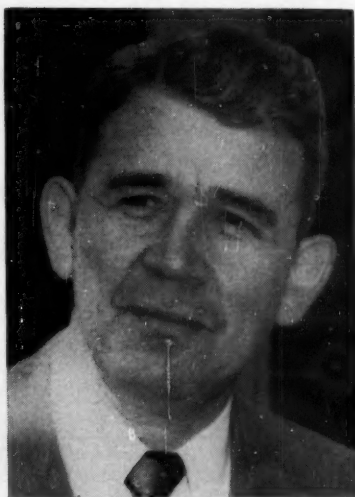
various industry groups, and hence, the chance of getting a bill through Congress has never been bright. It's fairly certain, however, that a House Commerce subcommittee will finally consider the subject this year. Unless a single industry position is presented, there will be little chance of final Congressional action before 1957.

A substantial revision of alcohol tax laws is planned this year. Because most (if not all) of the changes meet with approval of interested industries, the prospects of passage on this are good. It will merely be a problem of finding the time for consideration.

But there will always be time for investigations, which may give Democrats political capital on such subjects as big business favoritism, conflicts of interest, and the like.

The synthetic rubber competitive situation is in for another go-round when the Senate Banking Committee takes up whether or not to approve sale of the largest government synthetic rubber plant to Goodrich-Gulf (*CW*, Dec. 31, '55, p. 13).

Too, Sen. Clinton Anderson will use the forthcoming report of the McKinnon committee to try to embarrass Atomic Energy chief Lewis Strauss over his alleged blocking of industrial participation in the atomic field.



GOVERNORS KNIGHT, KENNON: Now a-brewing in 17 key states . . .

New Laws for Industry

In 17 states containing more than 50% of the country's chemical industry, the legislatures will be haggling from now until summer on numerous measures affecting chemical process companies—and election-year politics will be in constant attendance at each session.

Both state and national political considerations will place a heavy hand on members of both major parties in their actions at the state capitols. Probable upshot of this situation: touchy topics—such as new taxes and controversial labor restrictions—will generally be soft-pedaled during this year's sessions.

Instead, it appears that the state lawmakers will be spending more time than usual on such measures of industry import as water supply, pollution control, industrial development, and food-drug-cosmetic regulations. In a number of states, big issues will include bills on subjects of general concern to all employers, such as tax rates for workmen's compensation and for unemployment insurance.

Water for Industry: Out in California, where the recent floods again dramatized that state's maldistribution of water, Gov. Goodwin Knight is asking the legislature to tackle two questions that have become charged with emotion in that state:

- A proposal to set up a new and separate state department of water resources.

- The long stalemated \$1.5-billion Feather River project that would involve taking water from the water-rich northern half of the state and running it down into semiarid southern California.

In New Jersey, too, the legislature will be called on to face up to the task of providing for the state's future requirements for industrial and municipal water. Arizona's lawmakers will have before them a proposal to create a state water authority. That agency would have power to proceed with engineering, financing and other phases of the central Arizona project, which would divert water to the central part of the state.

State to Pay Costs: Legislators in Pennsylvania—whose 1955 session seems to be running into 1956—are considering a bill to appropriate \$4.2 million for state subsidies to localities that have built or planned sewage treatment plants; and a somewhat similar bill has been offered in the Massachusetts legislature. The Pennsylvania measure would apply to all such construction undertaken since 1920, and the Massachusetts bill would cover all disposal plants whose plans and specifications had been approved by the state.

These measures—if put into action—would affect process companies by changing the whole stream pollution situation in those states. Once the towns and cities get enough sewage

plants to shield them from further criticism for contamination of rivers and creeks, then there'll be much more pressure on industrial companies to curb the discharge of factory wastes.

Chemical Plants Wanted: Louisiana Gov. Robert Kennon is expected to call his legislature's attention to a power-use tax that's been under attack as a deterrent to the location of new industrial plants in that state. In particular, that tax—which has been bringing into the state treasury only about \$1.3 million/year—is said to be particularly noxious to certain types of industry that use large quantities of electric power, "such as chemical and synthetic fertilizer plants." There's a similar move in Arizona to repeal a state tax on sales to the federal government, on the ground that such taxation tends to repel new industry.

Other state legislatures that'll be meeting between now and June: Colorado, Georgia, Kansas, Kentucky, Maryland, Michigan, Mississippi, New York, Rhode Island, South Carolina, Virginia and West Virginia. Farmer, labor, business and professional groups will be scrutinizing each bill introduced; and chemical companies have been finding that they, too, have a stake in vigilance.

Hinterland Pipelines

It's a bit like counting chickens before they're hatched, but in three widely separated regions where natural gas is expected to be available either late this year or by the middle of '57, process management people are manipulating slide rules to see whether the coming of those pipelines will make much difference in the complex economics of plant site location.

Pipelines are already under construction toward the Pacific Northwest states of Washington and Oregon, and a New York City investment house is underwriting the financing of a 577-mile pipeline to a large portion of eastern North Carolina. Several pipeline concerns are in the market for a Federal Power Commission certificate to bring natural gas into Florida.

And in Kansas—a state that has long been a major producer of natural gas—there's a state-sponsored move to encourage the production of petrochemical raw materials and intermediates. Ready availability of those materials, it's hoped, may lead to develop-

New Frontiers for Natural Gas

Area	Expected Availability	Probable Price *
Kansas	(immediate)	18-23¢
Eastern North Carolina	Autumn '56	36-37¢
Pacific Northwest	Early '57	30-33¢
Florida	Mid-'57	28-30¢

*Estimated rates for large industrial users on interruptible service basis in cents per 1,000 cu. ft. (subject to negotiation).

ment of a petrochemical industry in the Sunflower state.

Few Customers Signed: In the Pacific Northwest, it seems that the proposed Phillips-Pacific ammonia plant at Pasco is the only definite chemical customer for the gas so far.

Some of the existing chemical plants in the Puget Sound area will almost certainly use natural gas when it's available, but no commitments have been made up to now. Spokesmen for gas utility companies there say that several chemical process plants using natural gas may be built in their territories when the gas is on tap, but aren't mentioning any names. In any event, it's likely that natural gas on an interruptible service basis would be used largely to supplement fuel oil.

One possible customer: the proposed aluminum reduction plant in eastern Washington, to operate on alumina from native clays. Advocates of natural gas assert that use of this fuel can speed up the capacity of electrode baking furnaces in aluminum reduction plants, and hint that aluminum producers are looking into this usage.

For Southern Industry: North Carolina Natural Gas Corp.—clutching its recently issued certificate to build a pipeline from Charlotte to Wilmington—says its project “will be a definite attraction to the location of industry.” There have been hitches in the efforts of other pipeliners to bring natural gas into Florida, but Houston Texas Gas & Oil Corp. says it hopes to get its FPC certificate soon and to finish the construction work by April, 1957.

Extension of natural gas service into these new regions is sure to benefit industry generally, but primarily as a

fuel. When it comes to feedstock applications, it appears now that these new territories are going to be priced out of the market in that respect, what with producer areas—like Kansas and Texas—offering gas at virtually half the price that'll be charged at the far ends of the pipelines.

EXPANSION

Tall Oil: Engineering studies for a new tall oil fractionating unit at Springhill, La., have been revealed by Arizona Chemical Co.

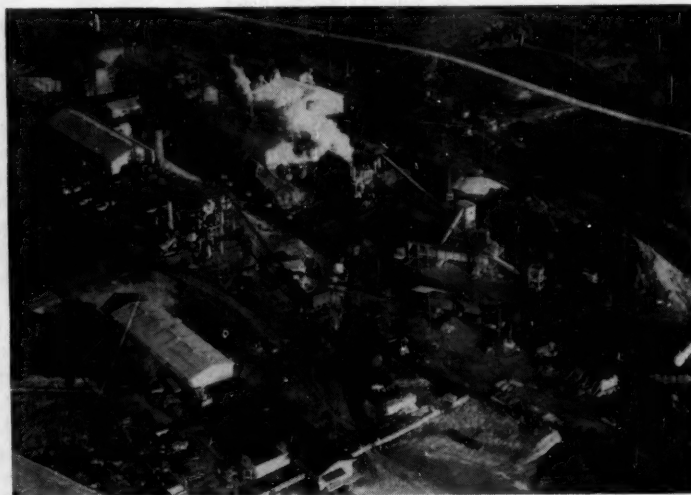
Purpose of the Springhill plant would be to provide additional available capacity for Arizona's growing customer demand for tall oil.

Superphosphates: Cardinal Chemical Co. (a subsidiary of Blue Grass Plant Foods Co.) started production this week at its new superphosphate plant at Danville, Ky.

Production will run close to 200 tons/day.

American Potash & Chemical Corp.'s Eston Chemicals Division has started construction of a plant at Vernon, Calif., to manufacture technical-grade parathion.

Completion is scheduled for early 1956; production will go solely to supply Ampot's own requirements and



Halfway Toward Completion

AS THE NEW YEAR came in last week, Shea Chemical Corp. passed the halfway mark in expansion of its elemental phosphorus capacity at Columbia, Tenn. (CW, April 9, '55, p. 18).

When completed, the new fur-

nace (see above) will add 40 million lbs./year of phosphorus to Shea's output, will supply the necessary raw material to Shea's sodium phosphate and phosphoric acid plants now under construction at Dallas, Tex.

Washington Angles »»

»» **More merger-probing money** will be voted the Federal Trade Commission and Dept. of Justice, if a House Judiciary subcommittee has its way. The group sees that increasing numbers of mergers are "hastening the reduction of competition," and hopes that more money will buck the trend.

»» **Should U.S. ferrocerium producers** be given the protection of increased duties? President Eisenhower has until Feb. 21 to decide whether he should raise duty back to that in effect in 1947—\$2/lb. plus 25% ad valorem. The Tariff Commission, which was asked to investigate under the reciprocal trade law's "escape clause" provision, finds that imports have "caused serious injury" to domestic producers.

»» **Ion-exchange resin makers** may find a broader market in sugar production. A research and marketing advisory group has recommended a study by the Agriculture Dept. on whether resin use can lower sugar production costs.

»» **Rosin exporters who buy from CCC stocks** will work under new rules Jan. 9 to March 31. CCC will continue to sell rosin and gum turpentine for domestic use at fixed prices determined each week, but will seek competitive bids on some 50 million lbs. of rosin for export.

»» **Another investigation** of the government's \$100-million nickel plant at Nicaro, Cuba, is coming. A House Government Operations subcommittee wants to check on how Merritt-Chapman-Scott got a \$43-million expansion contract and how a Chicago insurance firm won the workman's compensation bid. Chairman Brooks (D., Tex.) questions GSA Administrator Mansure's relationship with officials of the two companies.

the western parathion needs of California Spray-Chemical Corp.

• **Printing Inks:** Columbian Carbon (Canada) Ltd. has broken ground for a new printing inks plant outside Toronto, Ont.

When completed, the plant will house the firm's complete manufacturing, sales and research operations in Ontario.

Columbian Carbon also operates plants in Montreal and Vancouver.

Albany plant has a capacity of 350,000 lbs./year, but investment of only \$250,000 could expand its production to 500,000 lbs./year.

Atomic Energy Commission, Defense Mobilization and Army officials conferred recently with the National Security Council on the proposed goal of stockpiling 40 million lbs. of zirconium in the next five years. And one obvious way of reaching its goal, according to Governor Patterson, is to reactivate the Albany facilities.

• **The Atomic Energy Commission** is now planning to lease the uranium deposits on withdrawn public land and certain other areas under AEC control. Lands affected include those originally purchased by the Manhattan Engineer District (and subsequently transferred to AEC) and public lands withdrawn from mineral entry at the request of AEC for exploration purposes.

Leases will be awarded to the acceptable bidder offering the highest cash bonus by sealed bid. Royalty rates, work requirements, and other conditions will be determined individually, and stated in the bid invitations.

• **Completion of the acquisition** of 100% of the stock of Western Electrochemical Co. (Henderson, Nev.) by American Potash & Chemical Corp. was made public last week.

Ampot, which has owned 48.2% of Western Electrochemical common, issued 33,295 shares of its Class B stock to acquire the balance.

Further, the name of Western Electrochemical has been changed to American Potash & Chemical Corp. (Nevada) in order to facilitate the integration of the new company's activities into those of the parent organization, and henceforth, the Nevada company's products will be sold under the Trona brand name through the sales organization of Ampot.

• **Arapahoe Chemicals, Inc.** (Boulder, Colo.) is offering 1,800 shares of non-par-value common stock to its present stockholders. Subscription rights expire Jan. 14.

• **Five more company incorporations** in Dover, Del.:

• **Lumber and Chemical Corp.**, listing authorized capital stock of \$900,000.

• **Thorium Minerals & Chemical Corp.**, listing authorized capital stock of \$50,000.

• **Fertilizer Construction Co., Inc.**, listing authorized capital stock of \$100,000.

• **Consolidated Lithium Mines, Inc.**, listing authorized capital stock of \$200,000.

• **Cary Chemicals, Inc.**, listing authorized capital stock of \$1,000.

COMPANIES. . . .

Kennco Explorations (Canada) Ltd., Canadian exploration subsidiary of Kennecott Copper, has acquired 500 mining claims in New Brunswick.

Only two drill holes have been put down so far, but the ore recovered is said to contain both lead and zinc, with some traces of copper, similar to previous lead-zinc discoveries in New Brunswick.

Site of the claims is a property about 20 miles southwest of the big deposits discovered two years ago by American Metal Co., Ltd.

• **The U.S. Bureau of Mines'** zirconium pilot plant at Albany, Ore., may be reactivated, according to Oregon Gov. Paul Patterson and Sen. Richard L. Neuberger.

Currently in stand-by status, the

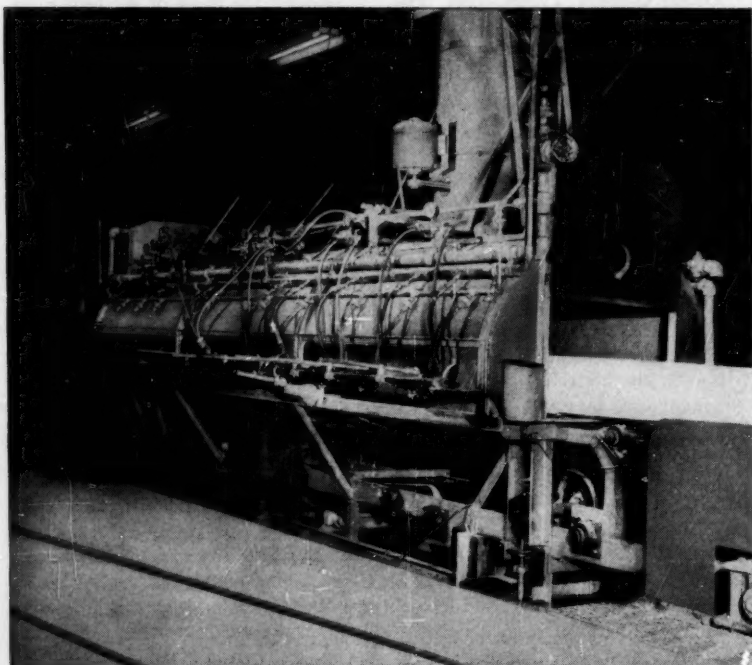
WHEREVER ADHESIVES ARE NEEDED

THE KEY IS CMC



◆ **IN THE PLANT**—In wet-column spray booth at the East Canton, Ohio plant of the Natco Corporation, CMC is used as the adhesive in applying ceramic glaze to structural facing tile.

◆ **AT HOME**—Sears Roebuck's Workmaster CMC cellulose wallpaper paste makes paper hanging so easy even milady can do it. It has excellent slip, stays moist, is non-staining; and will not sour even if left standing for days.



Whether in a consumer product or for an industrial application, adhesives stick to their job better when purified Hercules® CMC is included in the formulation.

Water soluble, CMC is compatible with a wide variety of gums, plasticizers, and resins. CMC will not separate in storage and keeps formulations stable indefinitely and over a wide range of temperatures.

Hercules CMC is uniformly high in quality from lot to lot and has exceptionally high purity (99.5%). For a testing sample, write to Hercules, indicating proposed uses so that proper type may be determined for your purpose.

Virginia Cellulose Department
HERCULES POWDER COMPANY
INCORPORATED

992 Market Street, Wilmington 99, Delaware



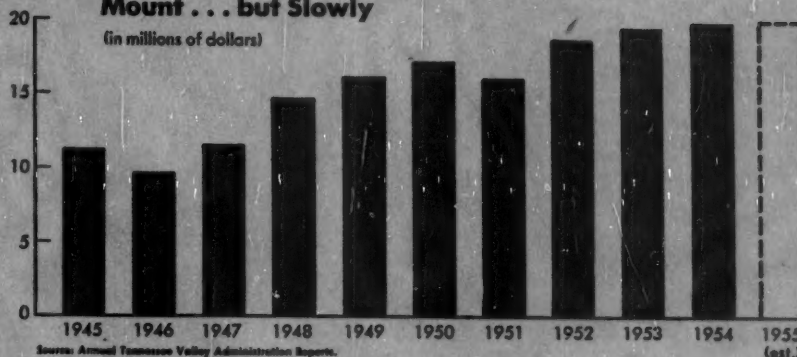
VE56-1

Charting Business

CHEMICAL WEEK
January 7, 1956

Chemical Sales of the Tennessee Valley Administration Mount . . . but Slowly

(in millions of dollars)

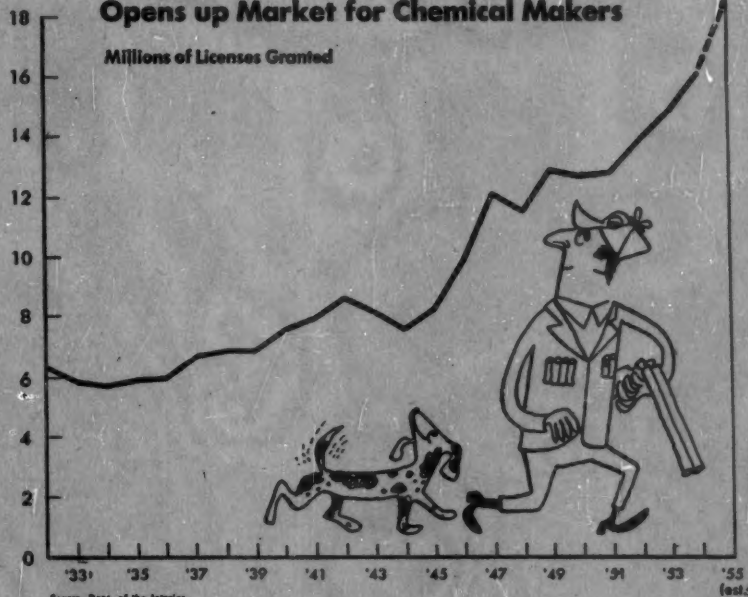


USED widely in practical and farm-scale education and demonstration programs, TVA-developed chemicals (mainly fertilizers) have wielded an influence in the U.S. economy out of all

proportion to their bulk in the nation's production. Last year, for example, TVA accounted for only 2% (in tons) of all U.S.-produced phosphate and nitrogen fertilizers.

Continuing Demand for Hunting Licenses Opens up Market for Chemical Makers

Millions of Licenses Granted



SEVENTEEN and a half million licensed hunters will take to the hills this year with shotguns over their shoulders. But unlike the little man in the 17th Century, whose bullets were made of lead, lead, lead, the modern sportsman's ammunition includes (in addition to lead compounds) a great variety of other chemical components including barium

nitrate, calcium silicate, bleached shellac, ethyl alcohol and magnesium oxide.

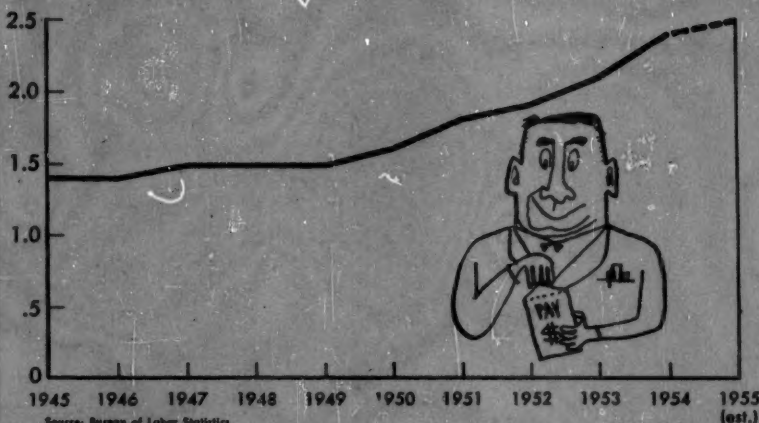
Also required in substantial quantities are: ether, acetone, graphite, organic stabilizers, nitroglycerine and nitrocellulose—for smokeless powder; acetone, graphite, waterproof adhesives, nylon, polyethylene and lacquers—for primer waterproofing.

Charting Business

(Continued)

WAGE BILL FOR CHEMICAL AND ALLIED PROCESS INDUSTRIES OVER THE PAST DECADE

(in billions of dollars)

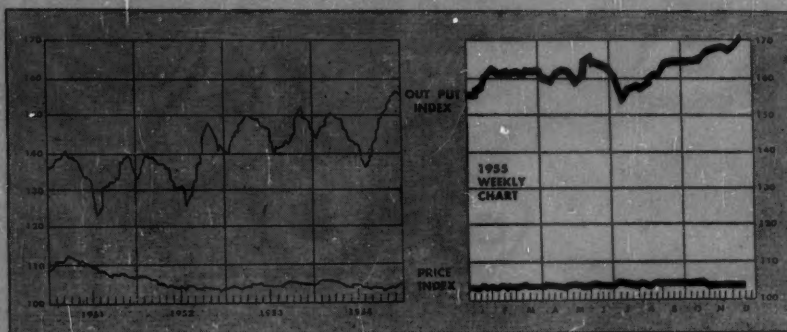


UP nearly 79% in 10 years—that's what postwar pay increases have done to the annual wage outlay of U.S. makers of chemicals and allied chemical products.

As the number of these companies' production and maintenance workers has

climbed by only about 10% over the decade, it's clear that wage rate increases account for the bulk of the rise in the total wage bill. Since VE and VJ days, average hourly earnings for these employees have mounted by nearly \$1 to their current level of about \$2.03.

BUSINESS INDICATORS



WEEKLY

	Latest Week	Preceding Week	Year Ago
Chemical Week Wholesale Price Index (1947=100)	104.8	104.7	104.4
Chemical Week Output Index (1947-49=100)	172.5	173.1	155.2
Stock Price Index of 11 Chemical Companies (Standard & Poor's Corp.)	477.0 (est.)	475.4	368.2

MONTHLY — Employment (Thousands)

	Latest Month	Preceding Week	Year Ago
All Manufacturing	13,535.0	13,442.0	12,657.0
Chemicals and Allied Products	5,650.0	5,716.0	5,459.0
Nondurable Goods	557.9	557.1	533.3

Spencer Service is Wonderful

Fast... Regular Mail
Faster... Air Mail
Fastest... Special Delivery



"However, if you really want fast service..."

NEED AMMONIUM NITRATE?



The largest selling brand of Ammonium Nitrate in the Midwest, Spencer "Mr. N" Ammonium Nitrate is prilled and packed in polyethylene-lined bags for 100% dryness. 33.5% Nitrogen. For fast delivery contact your Spencer office.



America's Growing Name In Chemicals

SPENCER PRODUCTS: "Poly-Eth" Polyethylene • Ammonia (Commercial and Refrigeration Grade) • Aqua Ammonia • 83% Ammonium Nitrate Solution • Synthetic Methanol • Formaldehyde • Hexamine • "Mr. N" Ammonium Nitrate Fertilizer • SPENSOL (Spencer Nitrogen Solutions) • FREZALL (Spencer Dry Ice) • Cylinder Ammonia

SPENCER CHEMICAL COMPANY

GENERAL OFFICES: Dwight Bldg., Kansas City, Mo. DISTRICT SALES OFFICES: 500 Fifth Avenue, New York City; First National Bank Bldg., Chicago, Ill.; Candler Bldg., Atlanta, Ga.; Union Planters National Bank Bldg., Memphis, Tenn.

NM
CH₃NO₂

NE
CH₃CH₂NO₂

THE CSC NITROPARAFFINS

New Stars

to give new direction
to the chemical industry

T-NP
CH₃CH₂CH₂NO₂

2-NP
CH₃CHNO₂CH₃

PHYSICAL PROPERTIES

	NM (Nitromethane) CH ₃ NO ₂	NE (Nitroethane) CH ₃ CH ₂ NO ₂	1-NP (1-Nitropropane) CH ₃ CH ₂ CH ₂ NO ₂	2-NP (2-Nitropropane) CH ₃ CHNO ₂ CH ₃
Molecular Weight	61.04	75.07	89.09	89.09
Boiling Point at 760mm, °C	101.2	114.0	131.6	120.3
Azeotrope with Water, bp, °C	83.6	87.1	91.2	88.4
NP in azeotrope, % by weight	77.1	73.6	64.5	73.1
Vapor Pressure at 20°C, mm	27.8	15.6	7.5	12.9
Evaporation Rate, by volume*	139.0	121.0	88.0	110.0
Freezing Point, °C	-29.0	-90.0	-108.0	-93.0
Specific Gravity at 20/20°C	1.139	1.052	1.003	0.992
Density of Vapors (air = 1.00)	2.11	2.58	3.06	3.06
Weight per U.S. Gallon at 68°F, lb	9.48	8.75	8.35	8.24
Coefficient of Expansion, per °F	0.00064	0.00062	0.00056	0.00058
Refractive Index, n _D at 20°C	1.3818	1.3916	1.4015	1.3941
Surface Tension at 20°C, dynes/cm	37.0	31.3	30.0	30.0
Heat of Vaporization at 30°C, cal., cal/g	143.3	124.8	107.3	104.4
Heat Capacity at 25°C, cal/g	0.422 ^{30°C}	0.441	0.471	—
Dielectric Constant at 30°C	35.76	28.00	23.22	25.48
Ignition Temperature, °F	785.0	778.0	789.0	802.0
Flash Point, °F (Tag Open Cup)	112.0	106.0	120.0	103.0
pH 0.01M Aqueous Solution at 25°C	6.4	6.0	6.0	6.2
Solubility in Water at 20°C, % by volume	9.5	4.5	1.4	1.7
Solubility of Water in NP at 20°C, % by volume	2.2	0.9	0.5	0.6

*N-Butyl Acetate = 100

NP DERIVATIVES ALSO AVAILABLE

AB (2-Amino-1-butanol)	NMP (2-Nitro-2-methyl-1-propanol)
AEPD (2-Amino-2-ethyl-1, 3-propanediol)	ALKATERGES
AMPD (2-Amino-2-methyl-1, 3-propanediol)	TRIS AMINO (Tris [hydroxymethyl] aminomethane)
AMP (2-Amino-2-methyl-1-propanol)	TRIS NITRO (Tris [hydroxymethyl] nitromethane)
NB (2-Nitro-1-butanol)	HAS (Hydroxylammonium Acid Sulfate)
NEPD (2-Nitro-2-ethyl-1, 3-propanediol)	HC (Hydroxylammonium Chloride)
NMPD (2-Nitro-2-methyl-1, 3-propanediol)	HS (Hydroxylammonium Sulfate)

SAMPLES ON REQUEST

Here are the Nitroparaffins — NM(Nitromethane), NE(Nitroethane), 1-NP(1-Nitropropane) and 2-NP(2-Nitropropane). These four NP's have a potential range of usefulness unequalled by any other group of organic chemicals! CSC's new Nitroparaffin plant at Sterlington, La. is now in full production. Additional facilities for increased volume of NP derivatives are nearing completion.

In many cases, they provide better and more economical methods of manufacturing well-known and widely used industrial chemicals. However, the majority of the reactions yield entirely new compounds. There are practically an unlimited number of products which can be prepared from the NP's. As solvents, they present an unusual combination of properties — they are medium-boiling, mild-odored and, most important of all, they have strong solvent power for a wide variety of substances, including many coating materials, waxes, resins, gums, dyes, fats and oils, and numerous organic chemicals. The CSC Nitroparaffins are chemistry's newest stars. They give new direction to the production of old products and the development of new.

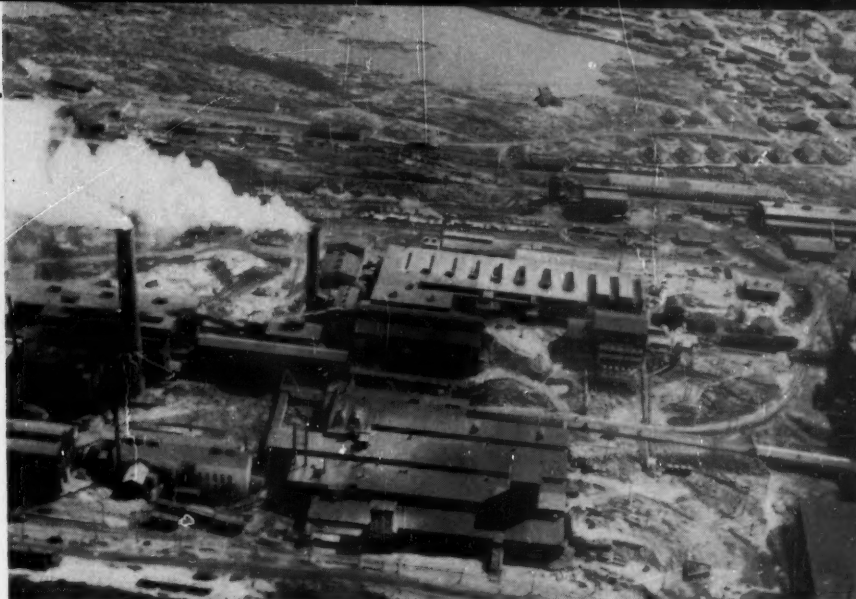


COMMERCIAL SOLVENTS

260 MADISON AVENUE CORPORATION NEW YORK 16, N. Y.

INDUSTRIAL
CHEMICALS

Metal ores from the frosty North, portland cement and oil from the more settled South—Manitoba's turning them out in increasing tonnages, thus setting up rosier opportunities for chemical process ventures in a big prairie province that's hungry for more industry.



PHOTOS BY MANITOBA DEPT. OF INDUSTRY AND COMMERCE

Mid-Canada Spurt: Vistas for Processors

Still in its infancy but with mounting prospects of profitable growth in shrewdly selected lines—that's Manitoba's chemical process industry at the start of 1956.

Rich in many resources, this vast but not overly populated province so far looks better to production managers than it does to most market researchers; but Canada's current westward flow of industry promises a more attractive market situation in the future.

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There's a spirit of enterprise all the way from the wheat belt in the South, where a new rush of oil drilling is expected as a result of a recent court decision, clear up into the great open spaces of the North, where nearly \$50 million has just been invested in opening a new copper and nickel mine.

Included in this let's-do-things spirit

is a desire to greatly step up manufacturing in Winnipeg and vicinity. This city has long been the financial and wholesaling center for the Prairie Provinces* and western Ontario; and now it's felt that Greater Winnipeg should start producing a larger proportion of that area's needs for manufactures.

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*Manitoba, Saskatchewan and Alberta.

that southern Manitoba and Winnipeg should have a number of new plants turning out agricultural chemicals and fertilizers for the big farms and ranches running along the U.S. border from Lake Superior to the Rockies.

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CH₃NO₂

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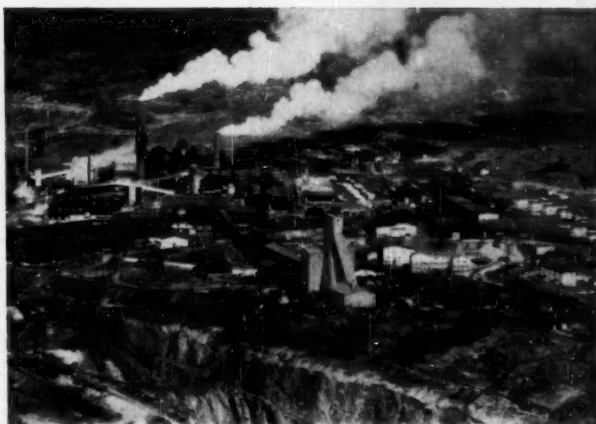
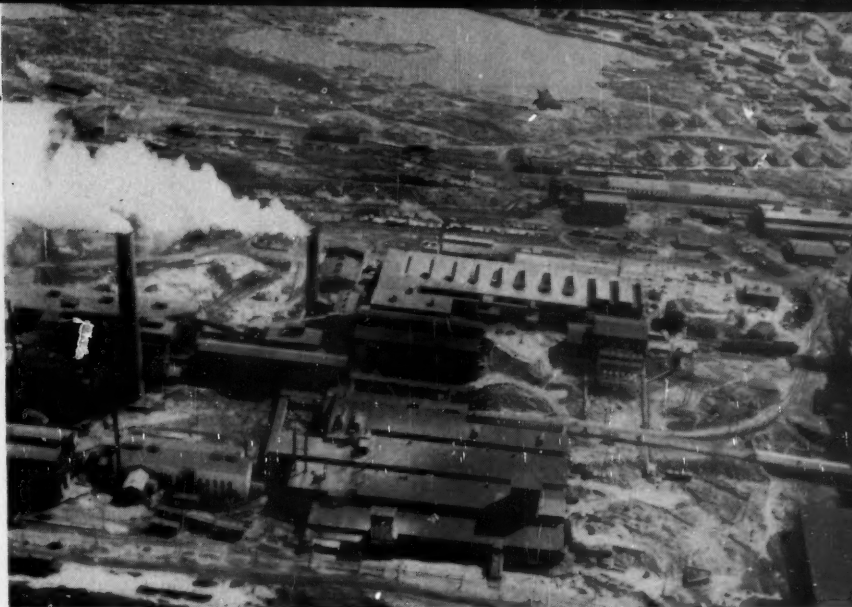


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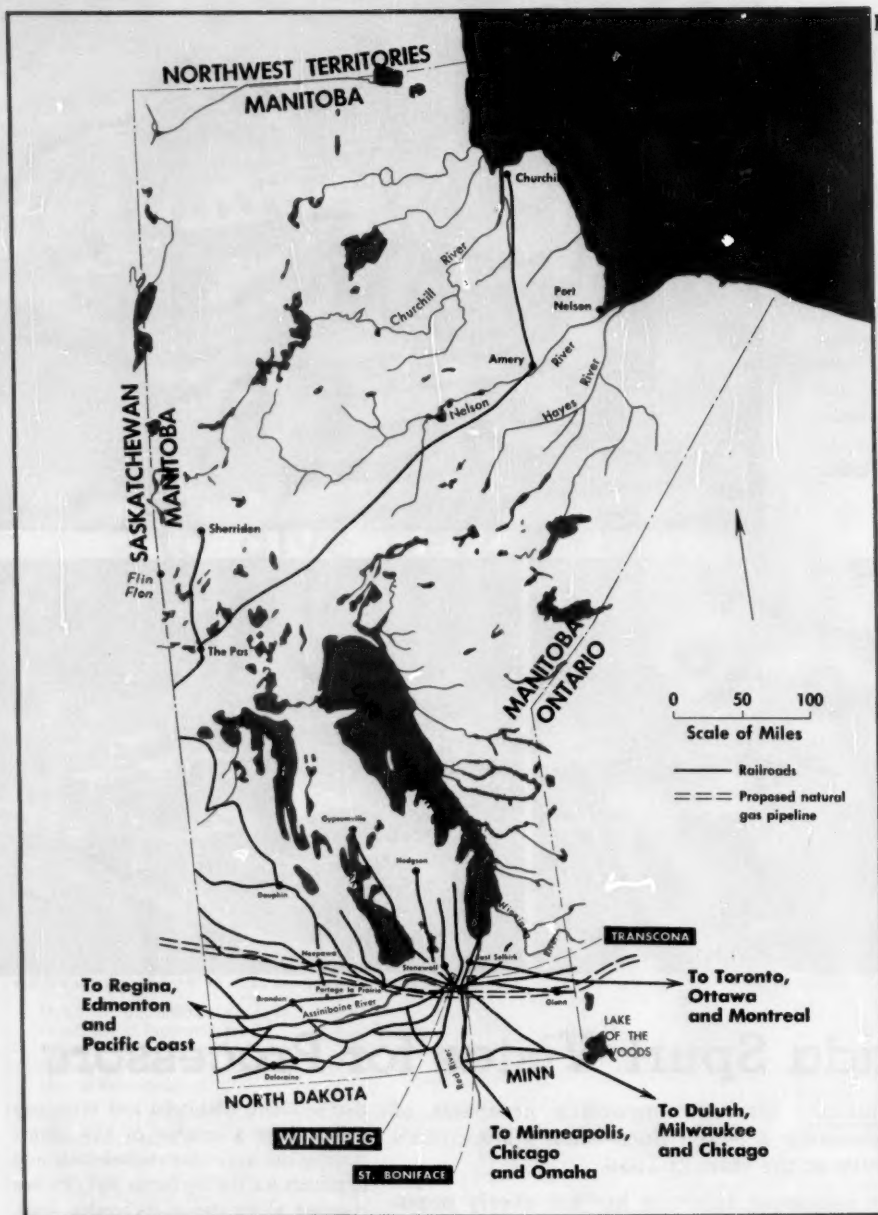
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- At least one integrated fertilizer



Wheat and flour mills, timber and paper mills—these Manitoba has in quantity, but is not yet too well stocked with people. However, its natural market area also includes other Western provinces, and the big farms and ranches can absorb lots of 'ag' chemicals.

ALREADY IN BUSINESS

(Number of chemical process plants now operating in Manitoba)

Number of plants located in — Products	Winnipeg and vicinity	Other cities and towns
Industrial chemicals, organic and inorganic	3	1
Compressed gases	4	0
Drugs and medicines	8	1
Soap, cleaning and polishing preparations	6	1
Paints, pigments, fillers, colors and solvents	6	0
Fertilizers	1	0
Vegetable oils	5	1
Toilet and cosmetic preparations	3	0
Pesticides	6	0
Explosives	0	1
Miscellaneous chemicals and specialties	8	1

READY RESOURCES

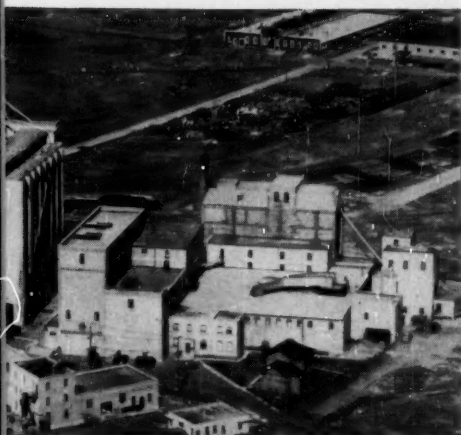
Now in Commercial Production

Cadmium	Lime	Selenium
Cement	Nickel	Silica sand
Clay	Petroleum	Silver
Copper	Quartz	Tellurium
Gold	Salt	Timber
Gypsum		Zinc

Available for Future

Chromite	Lignite	Shale
Coal (low-grade)	Lithium	Tungsten

(Story starts on p. 27)



operation, producing mixed fertilizers as well as ammonia. (This bill might be filled by Canadian Hydro-Carbons Ltd., Winnipeg, which—along with its \$35-million, Edmonton-to-Winnipeg pipeline project, which would bring in butane and other hydrocarbons—has plans for a \$15-million synthetic fertilizer plant with expected capacity of 600 tons/day.)

- Veterinary medicines and antibiotics, vitamins, and other feed supplements for the region's cattle, sheep and poultry. Up to now, Manitoba has been producing only about 1% of total Canadian output of these items; A. D. Little holds that economic factors are favorable for boosting Manitoba's share of production up toward 20%.

- Prepared feeds for livestock and poultry. "Since it appears that only one-fourth of prepared feed requirements are supplied by local concerns, a substantial margin is left for expansion of mixing facilities."

- Processed food products from agricultural raw materials, including frozen, dehydrated, prepackaged, evaporated and dried foods.

Centered at Winnipeg: Excluding the operations of the petroleum companies, Manitoba's chemical process industries have grown little since before World War II. The chemical plants—most of them are clustered in or near Winnipeg and St. Boniface—had about the same dollar-value output in 1951 as in 1941 (census years), but employment and unit production were down.

Good omens for chemical expansion

in '56 and beyond include the pickup in oil-well drilling; opening of a \$12-million oil refinery and addition of a catalytic reforming unit (designed for easy conversion to production of petrochemicals for explosives) at another refinery; planning for the trans-Canada natural gas pipeline that will cross southern Manitoba; opening of new copper-nickel-cobalt mines with ammonium sulfate and anhydrous ammonia as by-products of ore treatment; and current probing of low-iron lithium deposits, with one company contemplating construction of a mill with 1,000-tons/day capacity, a second company planning a 500-ton plant, and a third firm reporting drill core assays averaging 1.5 to 1.6%.

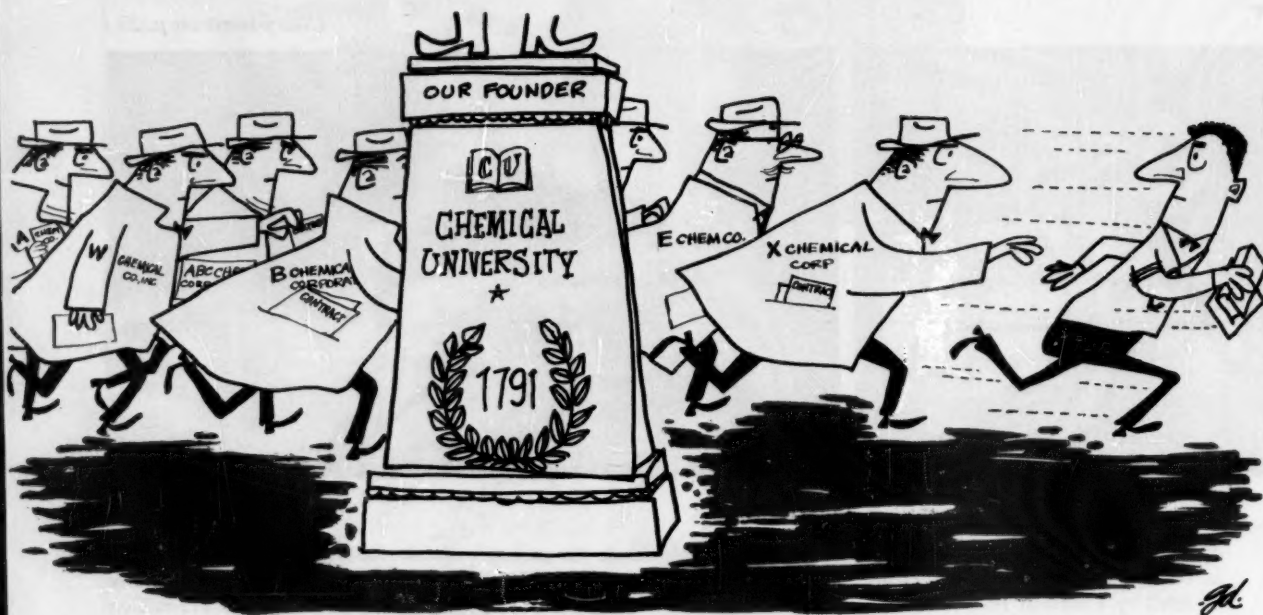
Crude petroleum output in Manitoba last year was approximately

double the 1954 figure, and cement capacity in the province will be nearly tripled when the current \$13-million expansion program is completed. Also expanding: Manitoba's gypsum industry, now turning out about 162,000 tons/year.

But it's probable that—despite all the excitement over these mineral developments and prospects of local processing of those products—the big opportunity for chemical companies in Manitoba is supplying farm chemicals to the Prairie Provinces. This is because these three provinces—with only 18.1% of the Canadian population in 1951—account for about 71% of the country's total farm acreage and produce 97% of the country's wheat, 94% of its flaxseed, 56% of its sugar beets, and 55% of its beef cattle.



NELSON RIVER DAM SITE: Till 1975, hydro units can fill all power needs.



Colleges Speak Out

Without a doubt, the big man on college campuses these days—as far as chemical company manpower recruiters are concerned—is the college placement director. Reason: more often than not, he's the key to many a successful manpower hunt.

However, with today's aggressive solicitation of college men by industry being stepped up to race speeds, recruiters know that serious congestion problems beset busy placement officers and their staffs.

Recently, to determine what sort of "batting average" chemical company recruiters actually have with college placement men, *CW* surveyed some 50 top directors across the country, asking:

"What, in your opinion, can chemical company recruiters do to improve their recruiting activities on your campus?"

Surprisingly enough, in almost unanimous response, the directors at the outset gave encouraging praise to chemical firms' recruiting practices. On the other hand, they also offered many pointers that are well worth consideration.

Top Comment: Top among college placement directors' comments is one that repeatedly suggests that most chemical firms are missing some good manpower bets—the man with low scholastic grades.

Says James Kelso, Massachusetts Institute of Technology's associate placement officer:

"Too often chemical company recruiters pay undue attention to top-grade men only. Unfortunately, they're overlooking the potentials of lower-graders, too."

As a matter of fact, graduating seniors with mediocre academic records hardly receive one job offer out of ten. Yet these men are eventually absorbed by industry, fill valuable niches—usually in smaller companies.

Another Salient Pointer: Furthermore, the survey reveals, another salient pointer might well be taken to heart by chemical company recruiters.

Unfortunately some chemical firms unwittingly harbor "superiority complexes" for chemical engineering majors. In consequence, highly qualified nonchemical engineers often shy away from interviews with "biased" chemi-

cal company manpower recruiters.

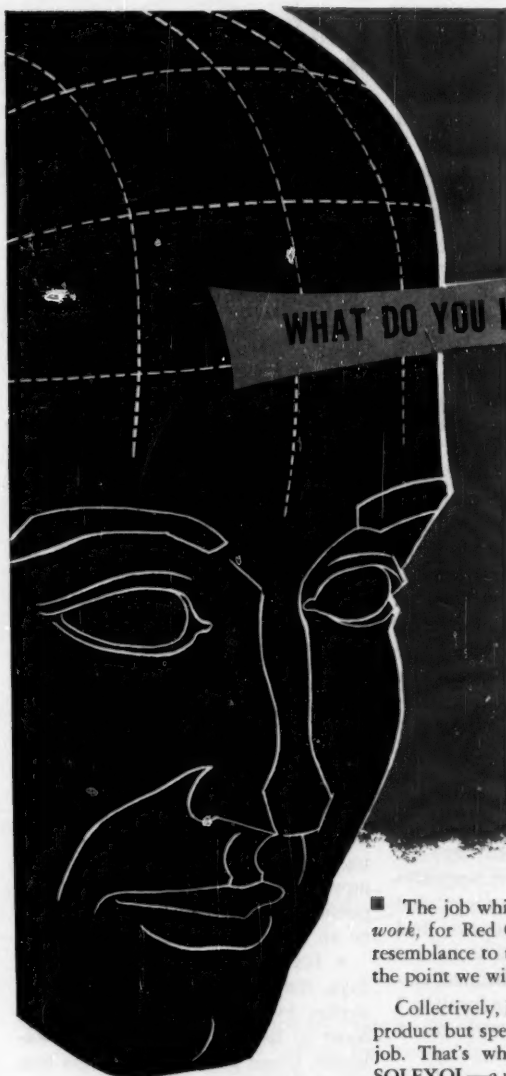
Harold Fee, Stevens Tech placement director, sums up many college placement directors' remarks by saying:

"Chemical companies aren't making enough effort to convince nonchemical engineers that there are jobs with solid futures for them in chemical companies."

Recruiting Mechanics: Most of the remaining constructive criticisms offered by college placement officers dealt with mechanics or interview approaches.

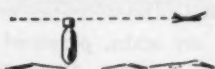
Summarized, these advise company representatives to:

- Make early (and firm) dates for interviews. Send company literature and necessary application forms ahead of time.
- Avoid sending more interviewers to campus than are absolutely necessary.
- Know the specific job openings and opportunities the company offers. Avoid overemphasizing money rewards, glamorizing jobs, or using "high-pressure" tactics.
- Centralize company recruiting. Students become confused when one company division vies with another for the same manpower, especially when divisions offer different sal-



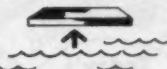
WHAT DO YOU HAVE IN MIND FOR RED OILS?

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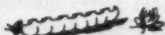
Used in the jelling agent needed to contain the highly volatile, flammable product, Swift's Red Oils meet rigid specifications as to stability and uniformity for use in Napalm.

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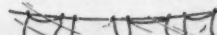
An efficient collector for separation in iron ore flotation processes, Swift's Red Oil is low in titer, high in uniformity, high in selective ability.

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- Respect college placement bureau authority. Don't side-step it by contacting faculty members or students directly. Send placement offices copies of all follow-up correspondence.

- Know precisely what the limitations of each college bureau are. Don't overlook their limited ability to hold group meetings, interrupt schedules, take students away from studies for trips. Each school differs from the next in its ability to provide services.

- Arrange luncheon or dinner meeting with faculty members well in advance. Avoid invading academic time or disrupting schedules with too many plant trips, home-office interviews.

One Final Point: One last point revealed by college placement officers' answers to *CW's* survey: college placement staffs are becoming vexed with some "Johnny come lately" companies that have entered the recruiting picture.

For, as one college director says, "While none of us feels that we can or should try to undo the times, we are nevertheless disturbed by the serious disruptions that exist nowadays on campuses. I can assure you that faculty members and deans feel strongly on this subject; for they have the temerity to hope that chemical employers also believe in education." From that note, company recruiters may well take their cue.

LABOR.

Three Strikes End: Possibly auguring for more industrial peace during 1956 was the ending last month of three trying strikes at process plants:

- At Wilkes-Barre, Pa., hefty wage increases brought members of International Brotherhood of Electrical Workers (AFL-CIO) back to their jobs at Okonite Co.

- After eight months of strife that involved violence and litigation, members of United Packinghouse Workers (AFL-CIO) are going back to work at the Godchaux Sugar refinery in Reserve, La. Both sides say they are "gratified" at the settlement, but refuse to reveal the terms.

- Unable to reach agreement with United Rubber Workers (AFL-CIO) through a 3½-month strike, Gro-Cord



WIDE WORLD
CHIEF JUSTICE WARREN: For employers, two tests on 'good faith.'

Rubber Co. is closing and selling its plant at Lima, O. A spokesman said the company felt it was "not welcome" in the city.

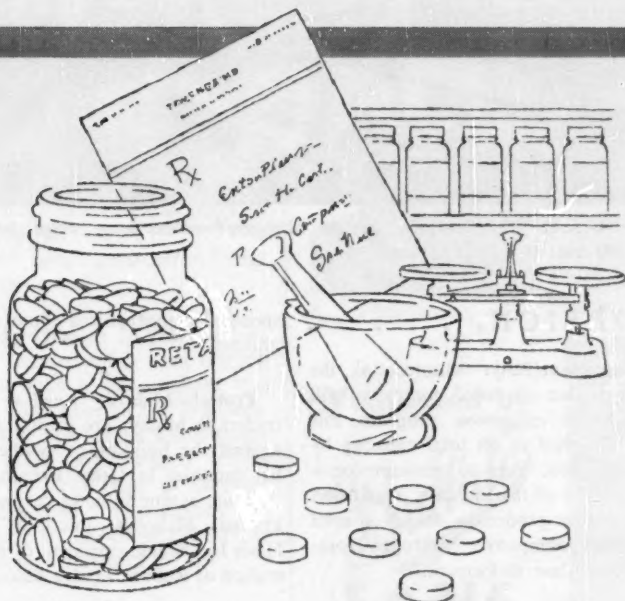
Big Decisions Due: The coming year is likely to provide major decisions on controversial labor laws; and rulings of the U.S. Supreme Court—now headed by middle-of-the-road Republican Earl Warren—probably will be an issue in the election campaign.

- Just before recessing for the holidays, the high court—in an opinion written by Warren—ordered a lower court to hear a National Labor Relations Board plea that a Georgia firm be cited for contempt for allegedly refusing to bargain collectively with its employees.

- In what may turn out to be a second test of the requirement that an employer must bargain in good faith, the Supreme Court has agreed to hear arguments on whether an employer who refuses a union's wage demands on the ground of inability to pay is then obliged to show his books to a certified public accountant retained by the union. National Labor Relations Board brought the suit against Truitt Mfg. Co. (Greensboro, N. C.); but the circuit court at Richmond threw the suit out, holding that the financial data asked for "relates to matters altogether in the province of management."

- The high court has also agreed to hear a test suit on the so-called "right to work" laws in 18 states.

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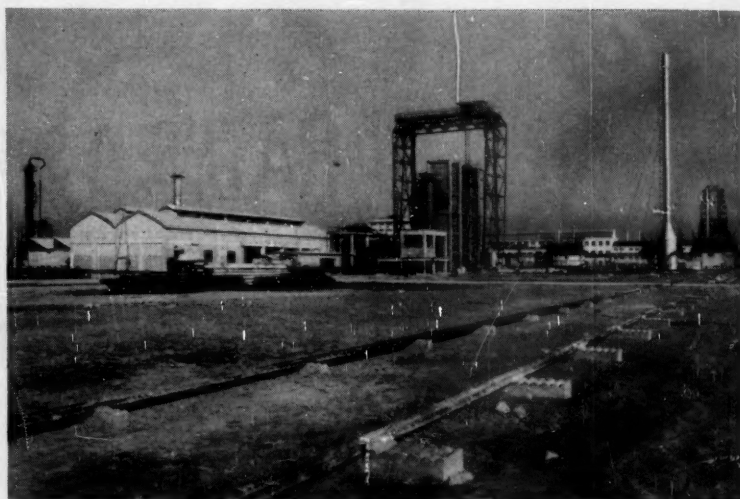
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CARBIDE—pipeline acetylene and calcium carbide.

BUSINESS & INDUSTRY.



FERRARA: Montecatini's newest nitrogen-from-methane plant turns out 50,000 tons of nitrogen/year.

FOREIGN.

Expansion/Italy: Montecatini, the giant Italian chemical company, will launch an expansion program this year designed to lift total capacity by almost 10%. Sure to account for a big portion of the increase: expansion of fertilizer-producing facilities such as the company's nitrogen-from-methane plant at Ferrara.

Search for Bauxite: West Germany, together with Switzerland, Italy and France, is launching an exploration for bauxite deposits and hydroelectric resources in French Guinea.

Under the name Societe Europeene pour l'Etude de l'Industrie de l'Aluminium en Afrique (AFRAL), the group will build 100,000-ton/year aluminum facilities, provided that the necessary raw material supplies and hydroelectric resources can be located.

British-Persian Cooperation: The British steel manufacturer, Edgar Allen & Co., Ltd. (Sheffield, England) has signed a contract (valued at \$2.1 million) with the Seven-Year-Plan Organization of Persia to supply facilities for a proposed cement plant at Doroud, in Persia.

Sulfur/Chile: Chile is reported to have concluded agreements with Sweden, West Germany, and several other European nations calling for shipment by Chile of sulfur in return for certain

specified manufactured goods and machinery.

Protests/Malaya: Leading rubber traders in Malaya are protesting again against the building of synthetic rubber facilities in Great Britain.

"Such action militates very seriously against Malaya's interests," states Heah Joo Seang, president of the Federation of Rubber Trades Associations.

Cellulose Output/Sweden: Cellulose production in Sweden in 1955 reached a record of nearly 3 million tons.

Production in 1954 was 2.8 million tons—of which two-thirds found its way into export markets.

Antibiotics/Finland: A new Finnish antibiotic, claimed to be the most effective ever seen in Finland, will be on sale in Helsinki early this year.

Called Usno, the antibiotic was first used as a skin medicant, then was discovered to be effective against internal disorders as well. Manufacturing cost of the drug, which is made from reindeer lichen: considerably less, it is asserted, than most other types of antibiotics.

Imports/Argentina: The Central Bank of Argentina will start later this month to issue up to \$25 million worth of foreign exchange specifically designated for the import of drugs and medicinals.

LEGAL

Overseas Combines: Late this month, the Senate will get recommendations from its anti-monopoly subcommittee on bringing the antitrust laws up to date; and it appears that one suggestion—of interest to a number of larger chemical firms in this country—will touch on proposals to make those laws less restrictive for U.S. companies in their overseas operations. The subcommittee has published a staff report, written by its chief counsel, reciting complaints by businessmen on how the laws are being applied. In general, U.S. businessmen feel that they're handicapped in trying to compete abroad against foreign concerns that aren't bound by the Sherman and Clayton acts. However, Committee Chairman Harley Kilgore (D., W. Va.) says he still favors strict enforcement of those laws.

Company Cleared: In Philadelphia, Publicker Industries has been cleared of charges that it had violated the city's fire code prior to the explosion and fire last May at its alcohol and chemical plant. Commissioner Walter Pytko of the city's Dept. of Licenses and Inspection says the company has cooperated fully in bringing the plant into full compliance with the law.

Guilt by Degree: In two recent chemical and pharmaceutical cases of violation of U.S. export control regulations, the Bureau of Foreign Com-



SENATOR KILGORE: On antitrust exemptions abroad, he stands aloof.

NEW NATIONAL ANILINE RESEARCH CENTER

Handsome and completely functional, the Research-Engineering Center of National Aniline Division of Allied Chemical and Dye Corporation in Buffalo, N. Y., is pictured at right. Shulgren & Whitman, Architects, Buffalo, New York.



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Roof installation of "Buffalo" Special Chemical Exhaust Fans at National Aniline. Large number of fans provides flexibility for variations in air handling requirements in many zones.

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The "Buffalo" Special Chemical Exhaust Fans shown here in the roof installation, are typical of the fine planning and selection of equipment that went into the National Aniline Research-Engineering project. Of all-weather construction, these exhausters have special sturdy cast iron housings which are resistant to moisture and corrosion. These fans have high capacity due to their high efficiency "Buffalo" rotors with backward curved blades.

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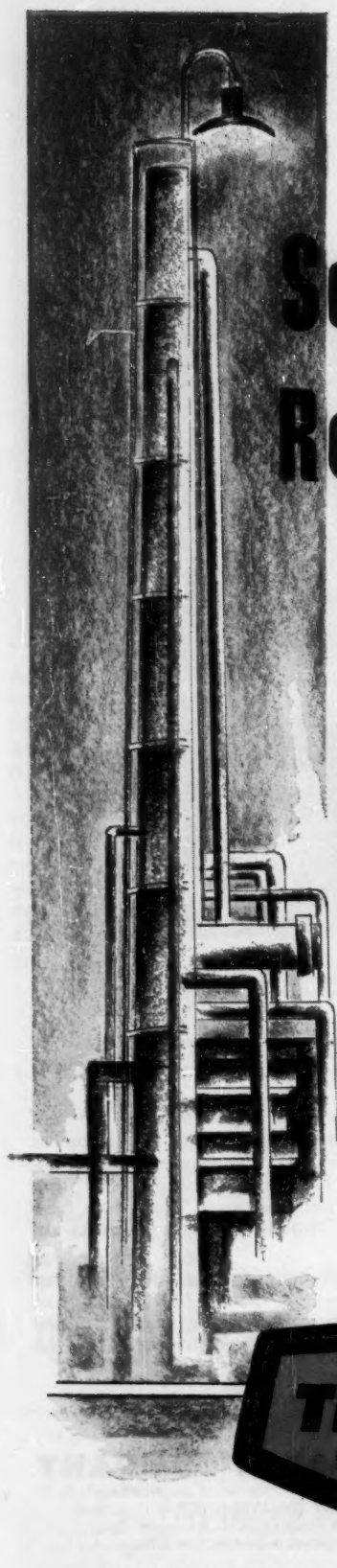
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merce has applied penalties of varying severity on grounds that some of the parties were less guilty than others.

- In the case of 100 tons of borax that was shipped to the Netherlands and then illegally trans-shipped into East Germany, the trans-shipper permanently lost all U.S. export privileges; but the original shippers—who insisted they didn't know about the final destination—were given only a six-month suspension.

- When penicillin, glucocalcium and other pharmaceuticals were illegally trans-shipped to Hong Kong via the Netherlands, there were three suspension orders: permanent for the Hong Kong merchants that were found to have arranged the deals; one year for the Dutch trans-shipper; and two months for the U.S. exporter.

KEY CHANGES. . .

William M. Haile, to vice-president, Linde Air Products Co. (New York).

Herman W. Leitzow, to vice-president, Schering Corp. (Bloomfield, N.J.).

W. L. Lafean, to vice-president, Spencer Kellogg and Sons, Inc. (Buffalo, N.Y.).

Philip B. Harley, to president, Baker Perkins Inc. (Saginaw, Mich.).

John F. Donoho, to financial president, American-Marietta Co. (Chicago).

William H. Evans, to director, Diamond Alkali Co. (Cleveland).

Carrol M. Shanks, to director, Union Carbide and Carbon Corp. (New York).

Herbert M. Kelton, to director, vice-president, and member of the executive committee, United States Rubber Co. (New York).

Eric G. Orling, to president, Baker Castor Oil Co. (New York).

Malcolm E. Hunter, to vice-president, Nitrogen Division, Allied Chemical & Dye Corp. (New York).

Bernard C. Barton, to director, research and development, Texas-U.S. Chemical Co. (New York).

William J. F. Francis, to vice-president, sales, American Potash & Chemical Corp. (Los Angeles).

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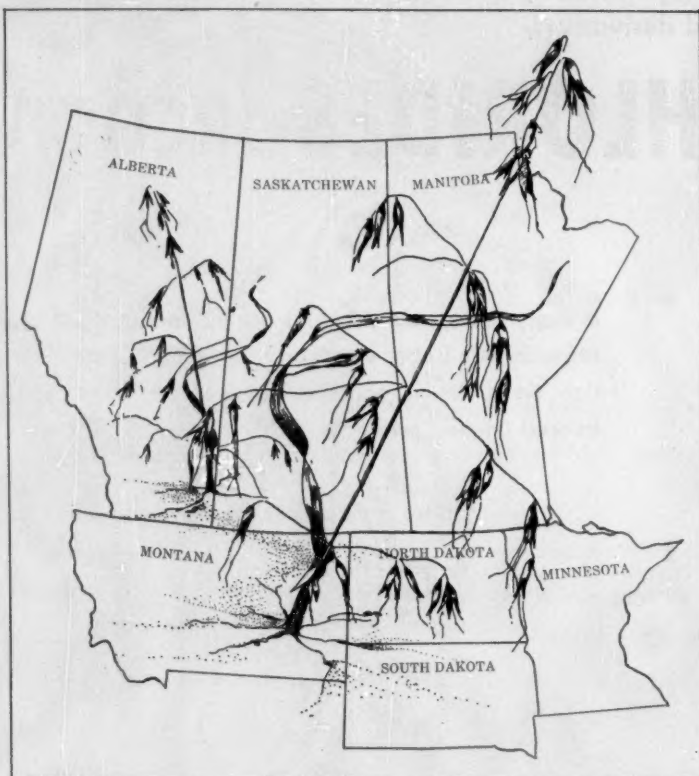
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East Rutherford, New Jersey

target

Wild Oats Tamer



WILD OATS: Among the crops, a robber.

EVERY year, plains farmers from South Dakota to Saskatchewan harvest a bumper crop of trouble, are calling for chemical relief. The crop is wild oats, and this year it will add up to more than a \$0.25-billion loss for—and hence, a sizable potential market—among United States and Canadian farmers.

Wild oats is a weed, one of the costliest. It got its start with the homesteader, followed the breakup of virgin lands, and grew steadily worse, spreading across the spaded plains like a prairie fire. Responsible for a greater reduction in farm income than any other weed, it will this year infest more than 40 million acres of Canada's Prairie Provinces, cost farmers there an estimated \$125 million. It will crop up in more than 20 million acres

across Montana, South Dakota, North Dakota and the adjacent fringe of Minnesota, will eat up almost \$100 million of U.S. farm profits.

Weeds at Work: Like all weeds, wild oats cuts down over-all operational efficiency. It competes successfully with money-making crops for water, light and nutrients, reduces over-all yields by at least 10%. The farmer has to hire extra hands and equipment to harvest his non-profit weeds and separate them from his other crops. He has to pay for special tillage implements and burners to bring the weeds under some semblance of control. Seed houses have to invest in expensive seed-cleaning equipment. Then there are dockage losses, delayed seeding costs, additional fertilizer expenses (to help bring crops

to harvest before weeds mature), quality losses, depreciated land values, and even reduced farm loans.

That's why, says Manitoba Dept. of Agriculture & Immigration's Henry Wood, farmers would be willing to pay up to \$10/acre for any chemical that can completely eradicate wild oats in one application. Figured for the 60 million acres already infested, this adds up to a (one-time-only) \$600-million market for any company that comes up with a formulation that can do the ideal job. The annual market for any wild oats pesticide requiring repeated applications, of course, will be correspondingly smaller but still sizable.

Killer Wanted: In either case, many chemical companies are interested. Among others, Dow, Monsanto, Naugatuck, and Pittsburgh Coke & Chemical are taking an active part in the control program, working closely with various school and government agricultural groups, screening numerous compounds, submitting samples of those that show promise, etc.

But all attempts to date have proved fruitless. Wild oats is an obstreperous weed. It is a member of the grass family, quite similar to its cultivated brother in appearance. But unlike other annual grass weeds, wild oats has proved immune to pre-emergence application of 2,4-D and other selective weed-killing chemicals now available.*

The current agricultural approaches show some measure of success in controlling the weed; but, say the experts, they're costly and take too long. Once a field becomes badly infested, it takes years of delayed seeding, postseed-

*The wild oats seed is covered with twisting fibers that curl and reverse-curl with alternate periods of dryness and moisture. Each twist—as well as cracks in the soil resulting from alternate freezing and thawing, hoofprints made by farm animals, and plowing—puts the seed further under the surface and out of reach of the selective weed-killers. At the same time, the weed can germinate from several inches below surface or, buried more deeply, can remain viable for several years.

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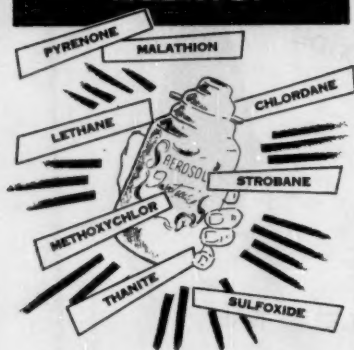
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January 7, 1956 • Chemical Week

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target

continued from p. 38

Wild Oats Tamer

ing tillage, seeding to grasses and legumes, sacrifice of tainted crops, etc, to bring wild oats under control.** That's why farmers are waiting—and willing to pay—for a swift, sure chemical killer.

Still Looking: A number of compounds besides 2,4-D, of course, have already been tried and rejected. In tests on federal experimental farms in Canada, for example, TCA, like 2,4-D, though effective against many grass weeds, couldn't stop wild oats; the borates and chlorates destroyed wild oats and all other vegetation and, in addition to being expensive, left the soil sterile for a long period afterward; MH, IPC, CIPC, and the carbamate compounds proved fairly effective, but results were often conflicting, application wasn't satisfactory, or the compounds destroyed valuable crops along with the weeds.

These tests are continuing, of course, at numerous research centers both in the U.S. and in Canada. And of the many compounds currently undergoing evaluation, some—known only by the manufacturers' code names—show promise as pesticides, particularly against wild oats. But it will be a while before results or formulations are fully known. Meantime, the researchers are looking for still more samples to test. Advice: chemical manufacturers should screen compounds in their own labs first, then submit samples of promising compounds to

federal and university experimental units.†

Tailor-Made: The ideal pesticide for wild oats must above all be an unmitigated killer. It must destroy plant and seed alike, make sure that not even the smallest part of the weed survives to reproduce. Additional characteristics looked for in the ideal pesticide will include among others:

- Soil penetration. The pesticide must be able to reach under the soil and destroy buried wild oats seeds. It should go down as far as the plow goes to destroy those seeds that might be turned up later and germinate. At the same time, it must not leave the soil sterile for any length of time. The farmer should be able to follow with food crops.

- Ease of application. It should lend itself to conventional application methods such as spraying, dusting, fogging.

- Selectivity. It must not damage money-making crops.

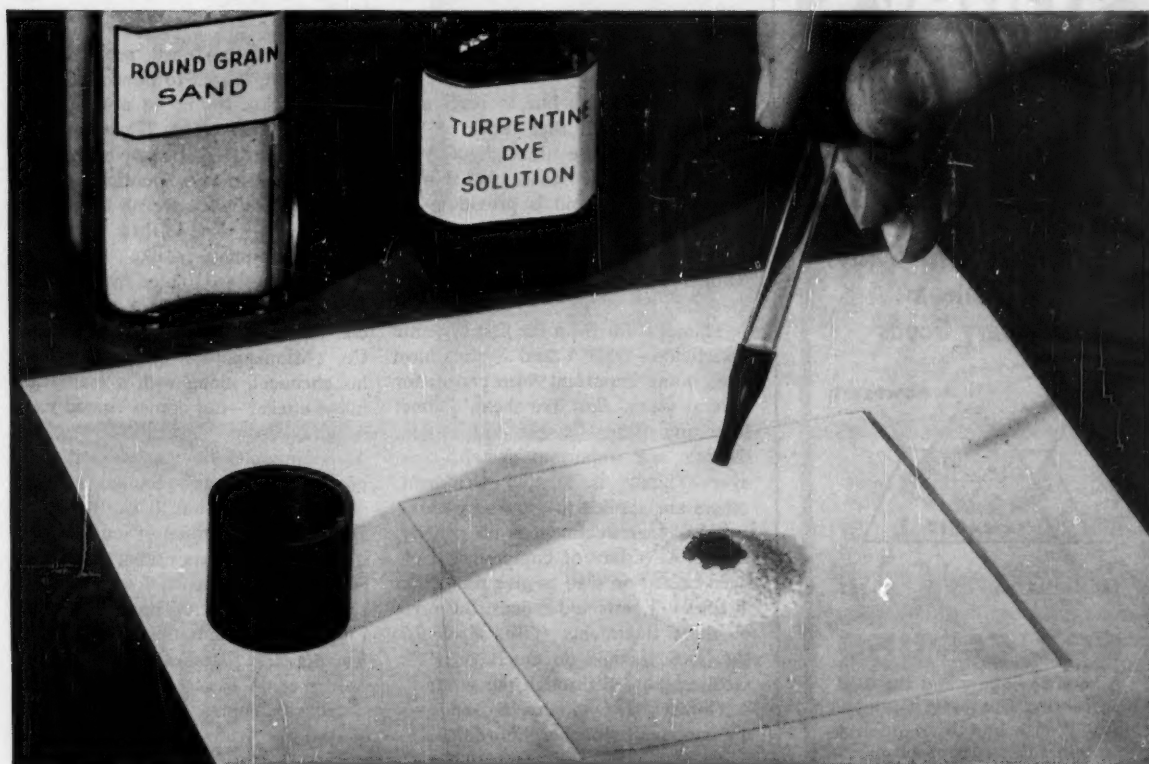
- Speed. The weed-killer should do its job in one season.

- Low-cost. Including application, cost of any pesticide with these characteristics should not run over \$10/acre for complete control.

Discovery of such a pesticide is likely, say the agriculturists, if not imminent. But the fields are still infested; and while they are, the welcome mat is out to anyone with a promising product.

†In the U.S.: Weed Section, Plant Industry Station, Beltsville, Md.; Dickenson Experiment Station, Fargo, N.D.; Montana Experiment Station, Bozeman, Mont. In Canada: Plant Science Dept., University of Manitoba, Winnipeg.

**On record are many instances of blighted land that still contained a serious infestation of wild oats even after being under grass or clover for seven years.



Grease resistance of Methocel-coated paper is tested by depositing a measured amount of tinted turpentine in sand on its surface.

Results of this test—a standard of the industry—are measured in time required for turpentine to stain the under paper.

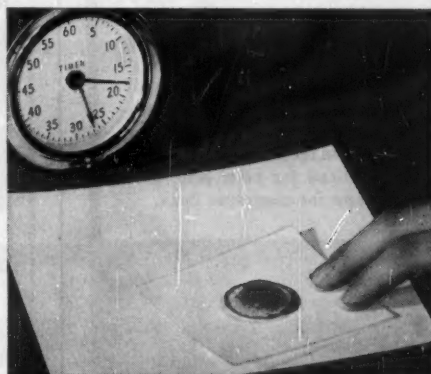
EFFICIENCY OF METHOCEL COATINGS PROVED IN GREASE RESISTANCE TEST

Paper sizing also affords a method of utilizing the film-forming properties of this cellulose gum

Films and coatings formed of Methocel® (Dow methylcellulose) are tough, flexible and water-soluble. Yet they are resistant to almost all greases, waxes, oils and solvents. These properties provide a most interesting list of present and potential uses.

In the paper industry, Methocel coatings are utilized as parting agents to separate cartons from solidified products, or as sizing to control ink penetration of boxboard stock and paraffin penetration of paper stock.

Many other industries rely on Methocel—safe in the assurance of rigidly maintained quality and always dependable supply. Write us today for more complete information and suggested formulations for your industry, using Methocel, the versatile synthetic gum—and receive a free sample for your investigation. THE DOW CHEMICAL COMPANY, Midland, Michigan, Department ME 825B-2.



The coated paper, bearing the sand, is moved at specified intervals to examine the sheet below for staining, as specified in test method T454m-44 (Technical Association of the Pulp and Paper Industry).

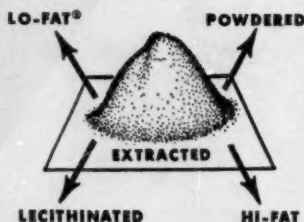
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For information about other quality Staley industrial products: Lecithin, Starches, Corn Steep Liquor, Corn Syrups, Soy Oils, etc., write:

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SPECIALTIES . . .

Healthy Start

How would you like to receive an injection at birth that rendered you free from disease throughout your childhood? In a sense, that's what American Cyanamid is providing for cotton plants now, with the commercialization of its systemic insecticide Thimet (*CW Technology Newsletter*, Dec. 24).

Thimet is far from the first systemic insecticide—OMPA and Systox have been doing important farm chores for several years. And like them, Thimet is getting its first chance with cotton. There's one important switch, however—Thimet is a seed treatment; others are applied to growing plants.

Now, seed treatment is no novelty, either. A variety of compounds have been coated on seed to give protection against soil pests and fungus. But none of these treatments (*CW*, April 10, '54, p. 60) could do much, once the seedling popped through the ground.

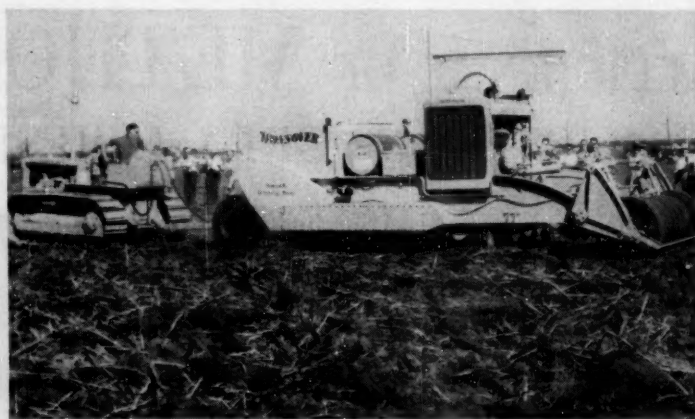
Thimet (O,O-diethyl-S-isopropylmercaptomethyl phosphorodithioate)

gives the cotton seed protection in the ground; is said to offer a measure of protection for up to nine weeks.

More Than Kid Gloves: Seeds treated with Thimet must be handled with care. But, says American Cyanamid, growers will have no more (and perhaps less) trouble than with some other phosphates, like parathion, because seeds are treated by firms best equipped to handle them—using special equipment developed by Kromer Co. (Minneapolis). The treater adds his chemical, along with a methylcellulose sticker—out comes coated seed.

Spray, Too: Actually, in spite of its commercial bow as a seed-treatment, Thimet isn't limited to that means of application. It can be spray-applied after its initial effective period runs out—in the meantime, the farmer has eliminated two to four expensive sprays by a \$3/acre Thimet seed step.

So far, cotton is the market target because U. S. Dept. of Agriculture approval came easiest. But, like other systemics, Thimet may someday be okayed for fruits and vegetables.



All-in-One Farm Equipment

EPITOME of farm machines is now making its bow—Norton Portland Corp.'s (Portland, Me.) Wons-over. Giant (25 ft. long, 9¾ ft. wide), the novel machine does nine jobs at once: plows and pulverizes soil, aerates it, adds lime and fertilizer (gas, liquid, or dry), injects

soil fumigants (note tanks of Shell DD), plants seed, applies pre-emergence herbicide. The \$32,000 machine is tractor-drawn, has a 260-hp. diesel engine to operate pulverizers, other devices. It can prepare and plant an acre in 20 minutes.

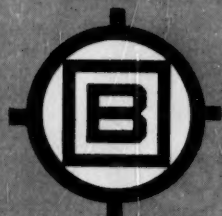
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ALOE TO OINTMENT: Aloes (shown inverted) are sold in Florida stores. Labs buy from farms, extract and pack the gel under sanitary conditions.

From Tea to Ointments

Listening to local legends can have its profitable aspects. Take the case of Collins Laboratories (Miami, Fla.), which has built a bustling enterprise by putting a gel extracted from the plant aloe vera—which had an ancient and wondrous reputation among Florida natives as a medicament—into a medically accepted ointment with wide distribution.

And Collins isn't alone, now, in capitalizing on the aloe reputation: Aloe Cream Laboratories (Ft. Lauderdale) is also making specialty medicines around the lily-like tropical plant. In retail volume, of course, all these products are small—slight indeed, compared with drug giants like antacids and aspirin—and there's still plenty of room for growth. Collins, for one, soon hopes for Central and South American distribution of its compounds.

Tea and Tonic: The legends that inspired these firms are part of the folklore* of Florida's Seminole Indians, who used extracts from aloe (a member of the lily family, though it resembles a cactus in appearance) for treatment of burns and skin irritations. Many other Florida natives used the aloe juice to make a "tea," claimed to be an all-around restorative. Few others in the U. S. ever tried it (though

its use is common in Mexico and many other tropical areas), because the gel had to be prepared from fresh plants, used immediately.

Dr. C. Crestwood Collins, a dentist in Florida for his health, heard all this in the mid-'30s. After investigating some of the stories and convincing himself of the efficiency of the extract, he developed a way to make the gel more useful. He combined it with petroleum and lanolin (60-70% active aloe gel), so it could be packed in tubes, stored for long periods.

Sunburn is perhaps the type of burn most Floridians use the gel for, but Collins, whose widow is now vice-president of the firm, gave much of his attention to radiation burns. Use of X rays or radium for therapy, for example, sometimes results in skin disorders for which aloe gel seems to be an effective treatment. (Just what, in the gel, contributes to the therapeutic value, isn't precisely known. The extract, however, is rich in vitamins A and D and chlorophyll.) It is in common use now in some of the major hospitals throughout the U. S.; McKesson & Robbins distributes it.

Juicy Leaves: A single aloe leaf will yield as much as 6 oz. of fluid (which, in Collin's six-man Miami plant, is extracted by hand). Several types of ointments are now made. Collins first produced one for medical use (sold in tubes and jars), now has

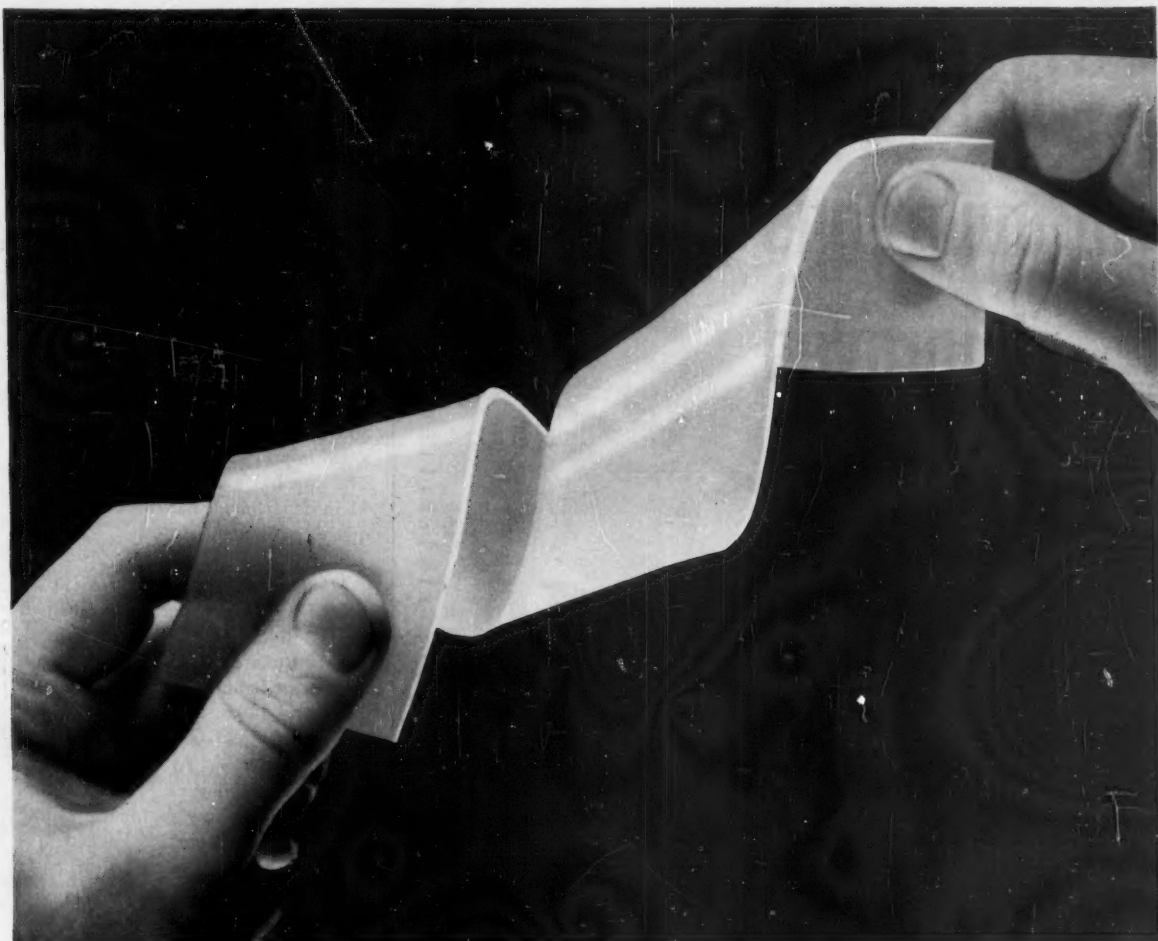


an Aloe Skin Therapy for general use, which is priced a little higher. In Ft. Lauderdale, Aloe Cream Labs now sells an after-tan lotion, hand and body lotions, in addition to the ointment.

Though aloe grows throughout Florida and is sold in many grocery stores, the ointment firms buy from farms. These, growing some 3,600 plants per acre, are a more reliable source of the plant.

Recently, considerable attention has been given to the aloe as a medicine for treatment of atomic burns. The military is even now testing the compounds for possible stockpiling. Whether it will ever have to be used or not, ointment makers prefer to concentrate on markets without the connotation of war.

*Aloin, another derivative, is a purgative of widespread fame—it has been known since the time of the Egyptians and Chinese seven centuries B.C.



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longer and withstand attack by heat and ultraviolet light.

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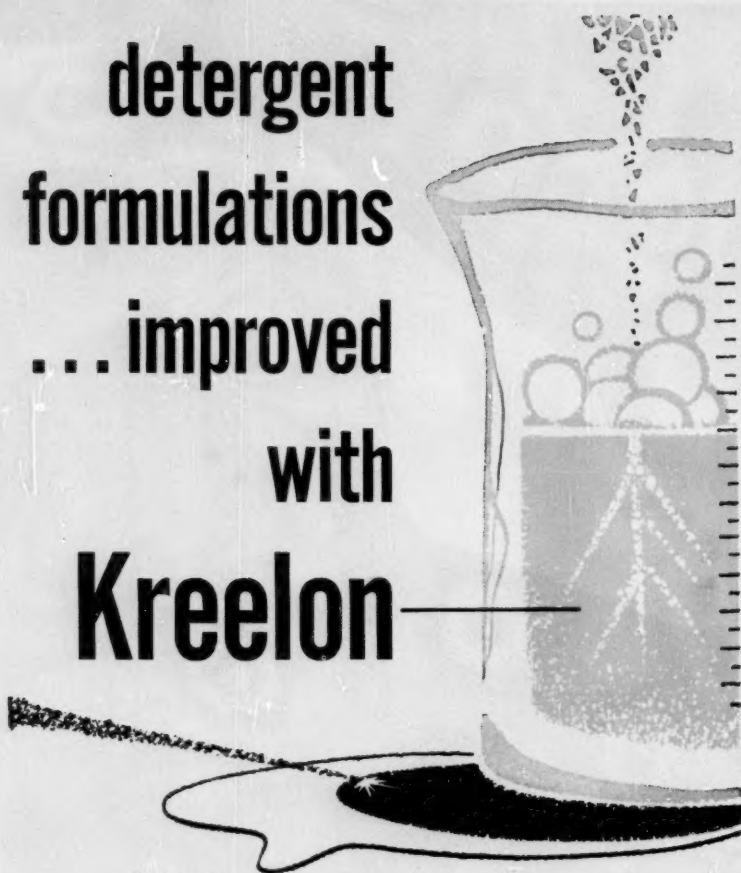
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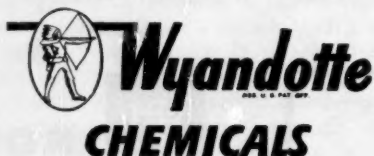


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SPECIALTIES

PRODUCTS

Tough Coat: Glid-Iron is Glidden's newest coating for the maintenance field. Described as a 100% solids material, it is said to have good adherence to metal, wood and masonry; and resist chemicals and abrasion.

Winter Special: Nonionic surface-active agents (Carbide's Tergitol) go into a new auto specialty, Osrow Products Co.'s (New York) Sno-off. The device is a combination scraper and antifogger—the antifogger being a pad impregnated with the surfactant. The unit has a 24-in. handle, sells for \$1 in department, hardware and automotive equipment stores.

Soother: All types of burns can be treated with a new aerosol product of E. D. Bullard Co. (San Francisco). Tagged Bullard's F. O. B., it is a spray-on anesthetic-antiseptic, is available in 3-, 5- and 11-oz. units.

Golden Glow: To add the gleam to copper cookware, Drackett Co. (Cincinnati) is now nationally selling a new cleaner, Twinkle. Packed in a 4½-oz. jar, the cleaner is in paste form, sells for about 50¢ jar.

Degreasing Jel: Snyder Chemical Co. (Akron, O.) has started marketing a new oil and grease remover for metal parts. Applied by brush or spray, the compound is permitted to remain on the surface 10-30 minutes, after which it is wiped or washed off. It will not damage painted or enameled surfaces, the maker says.

Around the Home: Dishwashing, lingerie washing—they're the target of a new liquid detergent, Scamper, made by Home Needs Co. (Los Angeles). Pink in color, and featuring an "easy-to-hands" additive called Lumine, Scamper is sold in 12- and 22-oz. cans.

At the Plant: Another liquid agent for use in metal cleaning is now marketed by Cowles Chemical Co. (Cleveland). Lixol, as the new material has been tradenamed, is particularly formulated to remove buffing compounds from ferrous and nonferrous metals—it is not corrosive, does not use conventional alkaline compounds (though it has a pH of about

9), nor does it have conventional solvents. Nontoxic and nonflammable, the concentrate is added to water, best used at 170 F.

Iron Claw: New iron sequestering agent, Saccharol, is now being sold by Reading Testing Laboratories (Reading, Pa.). Claimed to be more effective and less expensive than conventional compounds, it can be used between pH 4 and 12, and can also sequester calcium.

Treatment in Teeth: A new dentists' filling material—FluorOn—containing fluorides, which it releases in controlled amounts over a long period of time, is the product of American Consolidated Mfg. Co. (Philadelphia). The continuous contact treatment is composed of sodium fluoride and stannous fluoride, is said to be of most benefit to children.

EXPANSION. . . .

Across the Atlantic: Risdon Manufacturing Co. (Naugatuck, Conn.) has licensed Glenham Products, Ltd. (London, Eng.) to make the line of Risdon valves for distribution in England.

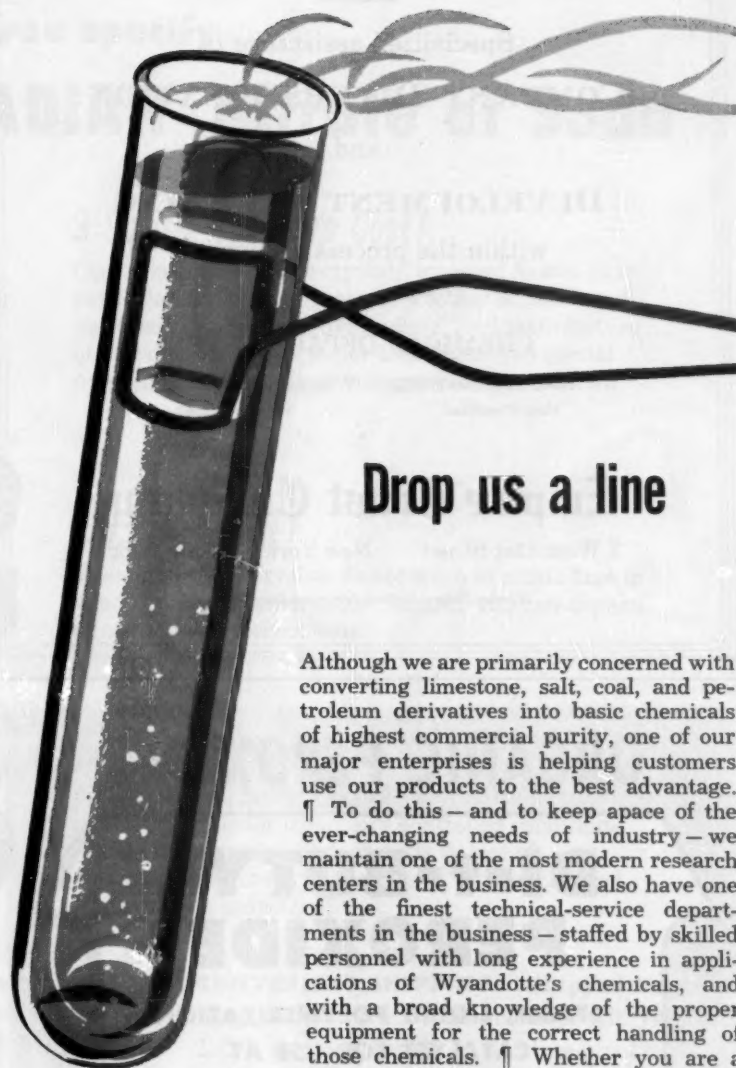
South and West: Diversey Corp. (Chicago) claims the first sanitary specialties plant is Venezuela with the creation of its Industrias Consolidadas. In operation since early last month, the plant is located in Antimino (outside Caracas), was formerly only a distribution point for the chemicals.

Diversey has also made news in Hawaii, by changing the name of its subsidiary, Kills 'Em Chemical Co., Ltd. (Honolulu) to that of the parent corporation.

Sunshine Paint: Benjamin Moore & Co. (New York) will start manufacturing paints shortly in its Jacksonville, Fla., facilities. The plant, Moore's tenth, is a 40,000-sq.-ft. structure formerly used as a warehouse. It will have laboratory and office space as well as manufacturing areas.

Ground Breaker: The fourth addition to its Waukegan (Ill.) plant has been started by Midland Industrial Finishes Co. Designed to give more manufacturing, warehousing, shipping and receiving space, the new structure will be two stories high, have a re-

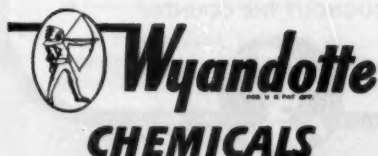
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SPECIALTIES

search lab, too. The firm's best known product is a silicone-base, heat-resistant finish tabbed Sicon.

Merger: Rather than expanding, Chesebrough-Pond's (Canada) Ltd. will consolidate its Toronto and Montreal operations. The firm plans a new plant at Markham, Ont., where it has an 11-acre property.

PATENTS

Insecticidal Meat: By combining pyrethrins and piperonyl butoxide with nitrate of soda, Frank Todd, Jr. (Martin, Tenn.) has come up with a compound for use on meats to prevent injury by flies, ham beetles, mites and other insects (U.S. Pat. 2,724,653).

Bug Chaser: Edward McCabe (Hyattsville, Md.) has worked out an insect repellent consisting of ortho ethoxy-N,N-diethylbenzamide in an inert carrier (U.S. Pat. 2,724,677). The patent is dedicated to the public.

Flame Out: A new liquid for quelling fires has been perfected by Charles Anthony, Jr., and Robert Thomann, Jr. Designed particularly for use at very low (—65 F) temperatures, the compound is essentially a water solution of 40-45% zinc chloride, 20-30% ammonium sulfamate, the rest (30-40%) water. Patent (U.S. 2,724,693) has been assigned to Specialties Development Corp. (Belleville, N.J.).

No Lightning Pictures: It's possible to reduce the chance of lightninglike phenomena on photographic film by a new technique of Eastman Kodak's (U.S. Pat. 2,725,297). As worked out by Donald Morey, the antistatic film has the cellulose layer treated with a polymeric salt of such compounds as carboxy methyl cellulose, alginic acid, sulfonated polystyrene, polyethylene glycol lauroyl acid sulfate, plus a gelatin of sodium chloride.

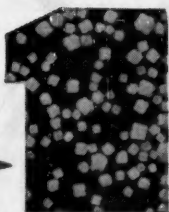
Pressure Fluid: Polystyrene has a new role in Monsanto Chemical Co.'s hydraulic fluids. According to British Pat. 740,078, it (and sometimes polyalkyl methacrylate) serves as viscosity index improver in Monsanto's phosphate ester fluids. Aliphatic dicarboxylic acids, too, can play a similar role (British Pat. 740,107).

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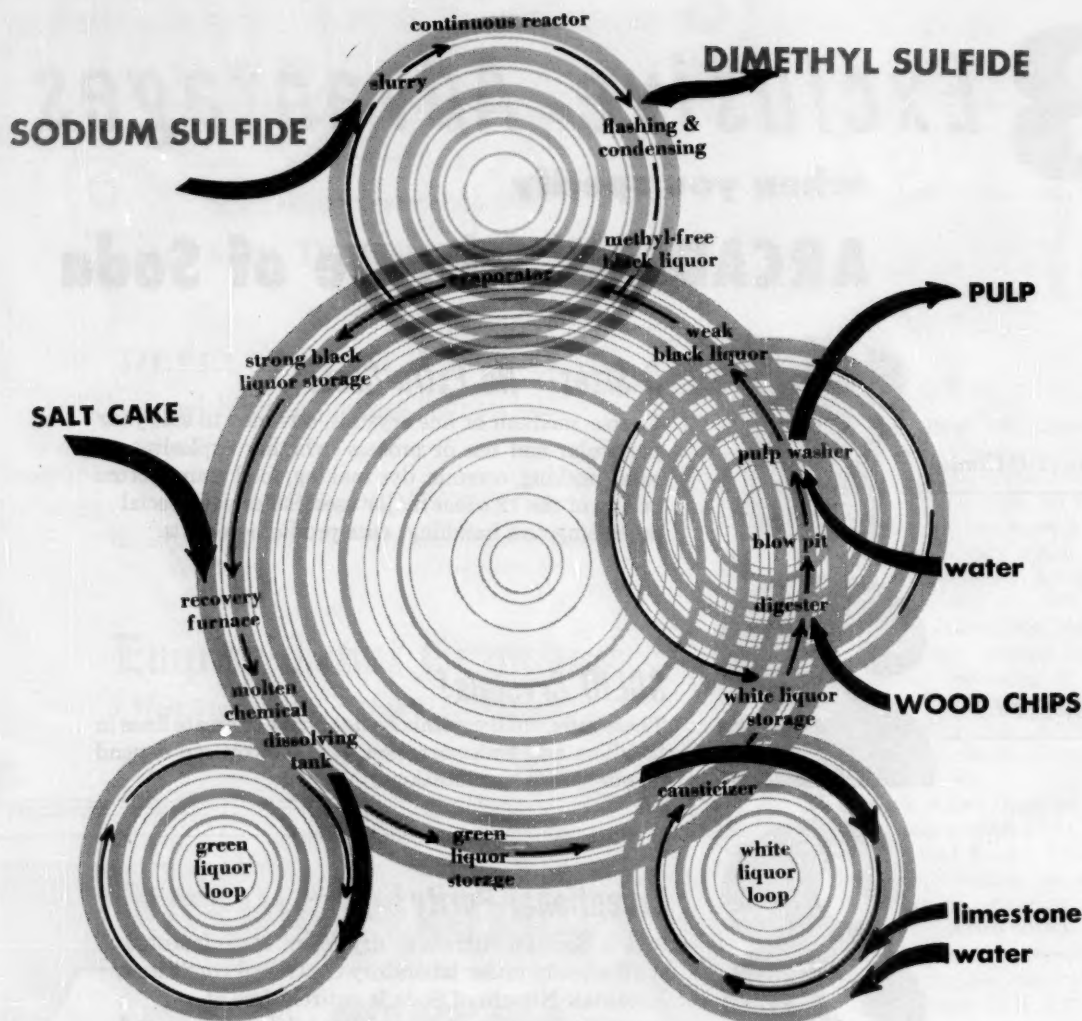
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New Loop on the Old Cycle

Black liquor (spent kraft digester liquor), which already has more steps than a fair-size skyscraper, will have an extra loop in the process at the Camas, Wash., plant of Crown Zellerbach: The firm will interrupt the evaporation of the black liquor to make dimethyl sulfide in a new, 2-million-lb./year pilot plant at Camas due to start up later this month.

CZ's process is based on U.S. Pat. 2,711,430 (issued to Hagglund and Enkvist, assigned to Swedish Cellulose Laboratory), on which the firm has exclusive U.S. and Canadian rights. Here's how it will fit in the over-all black liquor recovery cycle:

Normally, the black liquor is sent through about five stages of evapora-

tion to raise the solids content from about 15% to 60%. Salt cake is then added, the slurry is flash-dried and burned under reducing conditions, converting all the sulfur present into sulfides. Water, added to the furnace slag, produces "green liquor"; lime added to the green liquor produces "white liquor" (soda ash, caustic and sodium sulfide), which makes up a major part of the digester feed. (Calcium carbonate produced in the liming step is fed to a lime-recovery kiln.)

In a well-run pulp mill, enough heat is recovered from the organic matter in spent digester liquor to produce dried pulp without outside fuel.

The New Loop: The new dimethyl

sulfide plant will take black liquor from about the second stage of evaporation. Sodium sulfide will be added in proportion to the amount of methyl groups present, and the slurry that results will be heated at 480 F under 600 psi.

Flashing and condensing will recover the dimethyl sulfide, some methyl mercaptan (10-15%) and some heat values. The methyl-free effluent will be fed back to the proper stage of black liquor evaporation.

Essentially, the dimethyl sulfide operation will affect only two changes in the over-all liquor recovery cycle. In the first place, with sodium added as sulfide for dimethyl sulfide production, less salt cake will have to be added to the black liquor prior to burning. Secondly, with a significant fraction of the organic matter removed

PRODUCTION.

from the black liquor, less heat will be recovered from the furnace. So some outside fuel will have to be introduced into the system. But CZ admits this is a small consideration, feels it is almost "getting something for nothing" as it is.

What's the Use. Product from the pilot plant will sell for 15¢/lb. in tank-car quantities f.o.b. Camas. Since there is an estimated 75 million lb./yr. that could be recovered from CZ's pulping operations alone, and at least 700 million lb./yr. from the entire kraft industry, it is assumed that if the market is established, a full-scale commercial plant will be built and the price will be even lower (less than 10¢/lb.).

There are, as CZ sees it, six potentially big markets for low-cost dimethyl sulfide:

- As a base for oxidation to dimethyl sulfoxide or dimethyl sulfone (solvents).
- As a sulfur carrier in agricultural chemicals.
- As a sulfur carrier in rubber chemicals such as accelerators.
- As an ingredient in gas odorants (CW, Apr. 26, '52, p. 57).
- As a counter-odorant and masking agent.
- As an intermediate, since it's a small and highly reactive molecule.

CZ has been making dimethyl sulfide in its Camas research laboratories for the past six months—since about the time its Chemical Products Division was formed and its Central Research Department reorganized last July 1. With dimethyl sulfide, CZ now makes three chemical products, the others being Orzan (CW, Apr. 12, '52, p. 34, and June 12, '54, p. 64) and Orzan-based Greenz 26 (CW, Sept. 3, '55, p. 11). There is little doubt that these represent only the beginning of a large Pacific Northwest silvichemical industry—which might be defined as that section of the organic chemical industry that for economic reasons is based on raw materials from forest products. Certainly, CZ is looking at dimethyl sulfide as an intermediate for captive production of other chemicals, as well as at other chemical constituents of wood and liquor.

Silvichemical enthusiasts, in fact, compare their field with the petrochemical industry of 20 years ago. And they're doing their best to help it catch up.

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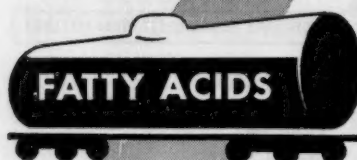
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PRODUCTION EQUIPMENT

Process Heater: The Type MH packaged vaporizer that Union Iron Works (Erie, Pa.) recently added to its heating equipment line provides a broad range of temperatures at low pressure. It's designed for use with Dowtherm "A" or "E", para-cymene or anisole; furnished for heating with oil, gas, waste heat or special fuels. The furnace operates at slight positive pressure to eliminate need for induced draft fan and to reduce required stack height. Straight-through gas flow over divided banks of straight line tubes provides high heat transfer without the high draft losses of a staggered tube arrangement. Packaged MH units are suitable for indoor or outdoor installations to meet requirements from 3.7 to 15 million Btu./hour.

Process Cooler: Baltimore Aircoil Co., Inc. (Baltimore, Md.) is offering two new lines of cooling equipment designed around the "blow-through" principle. Model "MC" evaporative condensers in nominal capacities to 350 tons, and Model "MT" cooling towers in capacities to 400 tons come in single, factory-assembled units. They're constructed in sections, says BAC, to facilitate expansion of capacity by adding to the basic unit as plant requirements increase.

Acid Pump: For convenience and safety in transferring acids from open vessels, as well as from standard carboys and drums, General Scientific Equipment Co. (Philadelphia) offers its portable electric Centri-F pump. Driven by a specially designed, totally enclosed motor, the pump delivers a steady, spurt-free flow of acid at 6 gpm. It's self-priming and self-draining, so no acid remains in the pump when it is removed from the container.

Control Unit: Industrial Controls Div. of Manning, Maxwell & Moore, Inc. (Stratford, Conn.) is out with a transmitting potentiometer — the American-Microsen—that's based on an entirely new operating principle. Using no slidewires, batteries, standard cell, "chopper" or converter, it employs a simple, two-vacuum-tube circuit that automatically balances input voltage against the output signal. Key to the system's high sensitivity (better than 3 microvolts) and accuracy

is its constant reference voltage supply, held to 0.05% by a unique Microsen balance. It's available as a thermocouple pyrometer or to measure d.c. output of electrical transducers; in ranges from 6 to 50 millivolts (220 F and up), with zero suppression up to five times the span.

Quality Check: Gases, liquids, slurries, sheets, or a flow of unit solids can be monitored by Kaye Development Co.'s (South Norwalk, Conn.) Spectrostat. Through the use of continuous color sampling, the instrument senses deviations in absorption wavelength bands within pre-selected limits. Observations may be made in a broad range from ultraviolet through near infrared. A patent-applied-for feature makes possible the simultaneous monitoring of color and turbidity, or two or more process stream components by a single instrument. Supplied in either standard or explosionproof housing, the Spectrostat can provide visual and/or audible warning of abnormal conditions, and can supply a 50-millivolt proportional output suitable for direct process control.

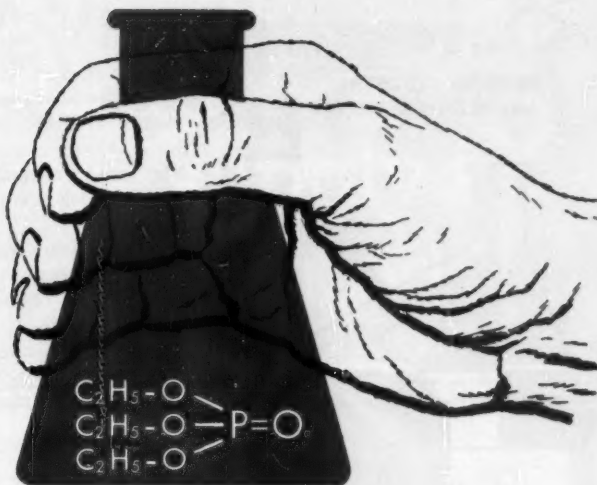
Instrument Air: Sawyer Bailey Corp. (Buffalo, N.Y.) is out with a 2-stage centrifugal compressor, which, it says, is the first capable of producing the pressures required for instrument air systems, particularly, and at the lower flow rates. Several models are available for supplying clean, oil-free air at flow rates from as low as 350 cfm. up to 2,000 cfm. at 65 psi. Compressors are also available at reduced discharge pressures.

Reducing Valve: Latest addition to Leslie Co.'s (Lyndhurst, N.J.) line of regulators and controllers is the Hi-Flo water-pressure reducing valve. Types W-1 and WL-1 valves for water and other noncorrosive liquids are said to provide 50-100% greater capacity than other types of regulators. Construction features include: large bowl and long-travel diaphragm that gives full flow; fully balanced for smooth throttling action; high-strength balancing diaphragm to eliminate less positive seals. They come in 1/2- to 2-in. sizes for inlet pressures of 10-250 psi.

Canned Pumps: Allis-Chalmers Norwood Works has just brought out

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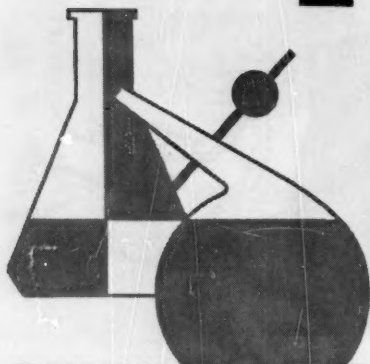
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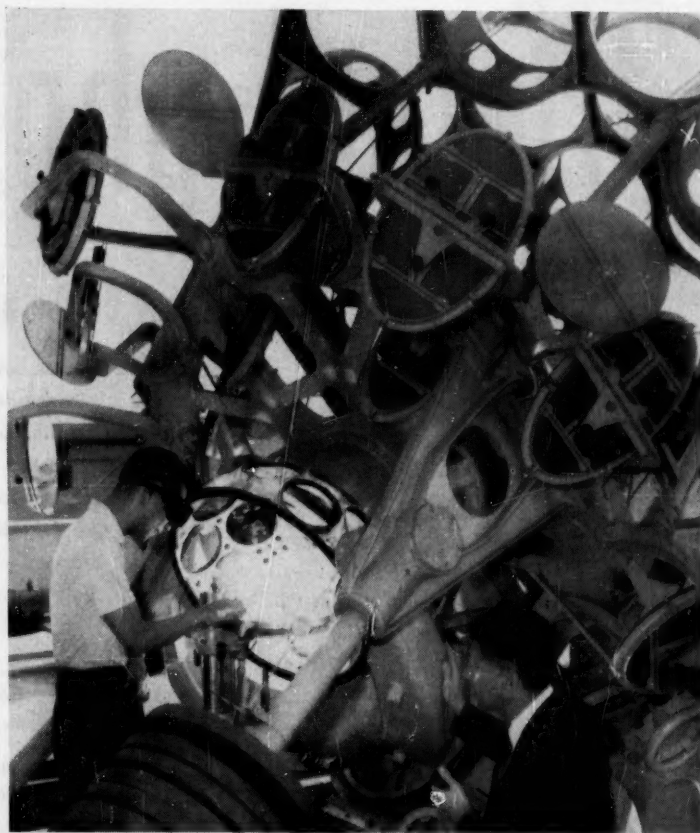
PRODUCTION

two new lines of "canned" centrifugal pumps, aimed at general-purpose duty. They're available in a fractional hp. line (C-10) to include motors through 2 hp. and an integral line (C-11A and C-11B) to take care of motors larger than 2 hp.

Allis-Chalmers feels the pumps will fit in with pumping operations involving dangerous or precious fluids, will assure satisfactory operation with a minimum of maintenance. Pumps for any application within the range of the two lines can be made from standard

parts. For any given rotor diameter, there is an interchangeability of parts peculiar to the "can" feature.

Cleanable Filter: Because of its unusually low pressure drop, Cuno Engineering Corp.'s (Meriden, Conn.) Super Auto-Klean micronic filter is said to handle flows in a space six times smaller than cartridge-type units. Cleaning is done (without stopping flow) by turning a handle on the top, removing accumulated sludge through bottom drain.



Focus on High Temperature

SOLAR FURNACES are gaining in popularity among technologists studying refractories and high-temperature phenomena. With this one (above) at California Institute of Technology (Pasadena, Calif.), Dr. Eugene Loh and Dr. Pol Du-

wez study the fusion of zirconium and thorium oxides at 5600 F. The 5-ton system of mirrors and lenses is equatorially mounted to track the sun automatically, collecting and focusing solar rays at the center of a 28-in. hemisphere.

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Boron Trifluoride	Potassium Chromium
Boron Trifluoride	Fluoride
Complexes	Potassium Fluoborate
Chromium Fluoride	Potassium Fluoride
Copper Fluoborate	Potassium Titanium
Fluoboric Acid	Fluoride
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Technology

Newsletter

CHEMICAL WEEK
January 7, 1956

Mounting purity demands on benzene, toluene and xylene may give the German-developed Scholven Chemie light-oil catalytic pressure refining process an American foothold. Koppers recently acquired rights to the process, is prepared to design and construct plants to yield a product that is said to have less than 1 ppm. of thiophene and (after removal of paraffins) a solidification point of 5.4 C.

The steel industry is the warmest potential customer. Its customers in the chemical industry have continually clamored for by-product aromatics of higher purity, so that today it appears that steel firms must soon produce purer benzene, or take a price cut on the grade they now turn out.

Since acid washing, the purification method they now use, has been pushed about as far as it can go, the time is ripe for something new. Several steel companies are talking to Koppers right now to determine whether the Scholven method is their answer.

Launched into commercial operation in the Ruhr in 1950, the process works like this: compressed coke gases and hydrogen are mixed with compressed raw benzene; the mixture is heated to 200 C, passed through a polymerizer into a vaporizer where raw benzene is evaporated; residual liquid containing unsaturated hydrocarbons is distilled and condensed to pitch.

This last step removes about 98% of the troublemakers from the system. After reheating, vapors feed into a catalytic cracker where contact agents convert sulfur, oxygen and nitrogen into hydrogen sulfide, water and ammonia, respectively. Reactants next are chilled: liquefied benzenes are separated; gases recycled into the process.

Simple fractionation reportedly is enough to cut high-purity components from the refined product—decidedly not true of acid-washed materials. And pressure refining output is about 10% better than that of acid washing. On the debit side, there's the fact that pressure refining needs a large installation to be economical. Capacity of the first German unit was 5,000 tons/month, subsequently trebled.

This potential pitfall was neatly sidestepped in the Ruhr by having several steel mills pipe their light oils to one central plant. Both Pittsburgh, Pa., and Gary, Ind.—likely sites of the first American Scholven plant—have steel complexes extensive enough to present no problems in the execution of a similar plan here.

The alluvial sands of Valley County, Idaho, could yield titanium, if Bureau of Mines tests can be scaled up to production levels. Bureau research reportedly indicates that the sands' ilmenite can be smelted into a high-grade slag suitable for use in titanium production. Also potentially extractable from the sands: manganese, monazite, columbium.

First reaction vessels and crystallizers are in place at J. T. Baker Chemical's (Phillipsburg, N.J.) new plant for producing purified and reagent inorganics. Expected to cost \$1.5 million, when fully equipped, the facility puts emphasis on contamination-prevention, features equipment for air filtration, a 10,000-lb.-capacity stainless-steel blender, all stainless or glass-lined equipment.

Technology Newsletter

(Continued)

Lithium producers are still hustling to meet mounting demand (largely in security-shrouded applications) for their products.

American Lithium Corp. went onstream late last month in a \$6.6-million plant at San Antonio, Tex. The process is similar to Foote Mineral's alkaline leaching of spodumene, except that ALC starts with African lepidolite. Advantages: lepidolite is easier to work with, requires lower kiln temperatures than the cementlike sintered spodumene.

On the other hand, lepidolite calls for an extremely high concentration of alkalis in the leach product—which means that ALC can't go directly to lithium hydroxide monohydrate as Foote does.

To do the leaching, ALC uses two 3-tank lines in parallel, followed by two tanks in series. Countercurrent wash thickeners pass the leach product on to rotary filters that take out lithium-bearing liquor and pass it along to jet filters for cleanup. Clear liquor is then crystallized by triple-effect evaporation.

Scientific Design is offering a new volatilization method of recovering lithium values from spodumene. A chloride volatilization with concomitant production of cement clinker, the process involves roasting spodumene with calcium chloride, recovering volatilized lithium chloride in solution, filtering and cooling to remove impurities.

Practically unlimited capacity is possible with the process, says Scientific Design. It is intended primarily for large-scale production of lithium from abundant domestic raw materials. Don't expect to learn details of the process until SD completes now-in-progress negotiations with likely customers.

Also somewhat of a mystery is the process Foote Mineral is readying to make the metal. It's an electrolytic method, but beyond that little is known outside the company.

Continuous nitration by the Biazzi process is being built into Hercules' Bacchus, Utah, explosives plant. Included in a \$2-million expansion of facilities at that location, the Biazzi unit will be used in nitroglycerine production.

It's Hercules' first fling with Biazzi in one of its own plants, although the company recently put the process into a unit it operates for the government.

The expansion will add about a dozen new buildings to the Bacchus plant, double present capacity. Aside from continuous nitration, the addition will embody these new features: electronic control of the dry mixing of dynamite ingredients; specially designed equipment to turn out the "king-size" (long and of small diameter) dynamite cartridges developed by Hercules two years ago.

The break-through into the 125 C-and-above temperature range may be imminent for makers of vinyl electrical insulation. A polyvinyl chloride insulation compound said to perform satisfactorily at 125 C. has been developed by Electronic Rubber Co. (Stamford, Conn.), is now being evaluated by wire manufacturers.



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CHEMICAL CANNON BALL: Trucks, too, face higher operating expense. Does it mean that . . .

Freight Costs Rise Again?

As chemical traffic managers plunge into the work of the new year, they're colliding head on with a new major problem—a fresh round of rail and truck freight rate increases that the Interstate Commerce Commission is now being petitioned for.

Both types of carriers are asking boosts that would mean:

- A flat, 7% across the board for rails. It would apply to all materials, with no exemptions. Railroads hope to short-cut procedure, start new rates Feb. 25. But coal and meat-packing industry protests may stall this move.

- Six to ten percent in the case of trucks. New York-New England common carriers have already filed petitions, and truckers in other regions will soon follow suit.

It's quite likely that both rail and truck lines will get their added revenues with little, if any, trouble. Staggering under ever-rising costs (wages, maintenance, highway tolls), carriers should present a strong case. Yet, the raises finally granted may be a percent or two less than those asked.

Reaction: Almost to a man, chemical company traffic managers are in agreement that a higher shipping ticket would hurt hard, despite mitigation by the fact that everyone pays it.

Freight bills of larger companies will be higher by several million dollars. In some cases, where freight rates

are sales determinants, precarious sales positions will be jeopardized. And, since raw material prices are, in effect, also lifted, price increases are a distinct possibility.

Painful though the coming rises will be, chemical companies generally aren't planning to protest to the ICC.* Reason: chemical manufacturers feel they have no more place to tell transporters what prices they should charge than the transporters have to tell them what chemicals should cost. But, in the same breath, traffic managers add strongly that they've few compunctions about using competitive transportation.

To counter the boost, several companies will up use of water transportation, a few will likely increase use of their own, company-operated, trucking fleets. Still other traffic directors consider the move another strong reason for more decentralization. Another alternative: more use of contract carriers, although it has limitations (capacity, forbidden territories, restricted authority). It's clear that though chemical companies won't oppose the rate hike, they'll be applying all shipping cost-cuts on the map.

*Rails must get ICC approval first before a general increase can be made; trucks can either get ICC approval or just file new tariffs with the commission. In either procedure, though, shippers have a chance to protest new rates and can try to convince the ICC that the rates are not needed. The coal industry, for example, is likely to be one strong protester.

DISTRIBUTION

Tapeless and Duty-Free

Chemical companies are reacting to a new GATT international convention, which recently came into force, and which facilitates the importation of samples and advertising materials.

The convention became effective Nov. 20, 30 days after the fifteenth nation* signed up became binding on and between only those parties acceding. The United States has not yet acceded, but appears likely to do so.

In outline, the convention provides that the nations allow:

- Duty-free importation of small-value (less than \$1,000) samples.
- Temporary duty-free importation of greater-value samples.
- Duty-free importation of specified advertising material, including films.
- Exemption of samples and advertising material, with certain exceptions, from prohibitions and quota restrictions.

For domestic chemical firms, accession by the U.S. would cut much red-tape surrounding sample shipments. Moreover, easing of restrictions would be a boon to exporters anxious to demonstrate equipment or materials abroad.

Those acquainted with the convention point out that U. S. firms could participate more freely in international trade fairs, could use more advertising films to demonstrate intricate products such as chemical equipment. Entry of goods valued above \$1,000 would be permitted without duty for 6 months, with deposits or security subject to later refund.

One leading chemical company points out that "such materials are now admitted into the U.S. duty-free. Adoption of similar rules by other nations would represent a constructive step forward."

The U. S. has initialed the basic draft, and the President has recommended Senate approval of accession. It seems likely that a bill will be approved during the upcoming session of Congress, but its priority is a moot point.

In Canada, with which a large portion of American chemical trade is carried on, the agreement seems assured of early approval—probably sooner than in the U. S.

*The 15: Denmark, Egypt, Finland, Federal Republic of Germany, Greece, India, Indonesia, Japan, Netherlands, Norway, Pakistan, Spain, Sweden, Switzerland, United Kingdom.

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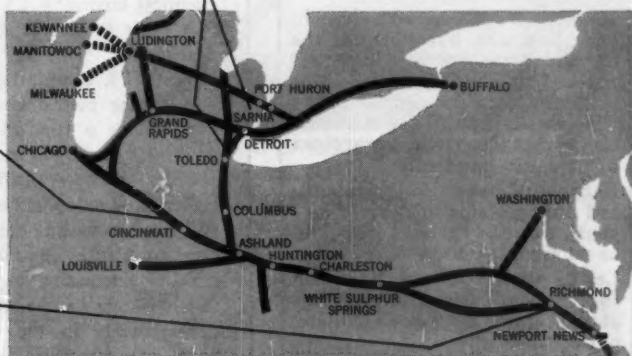
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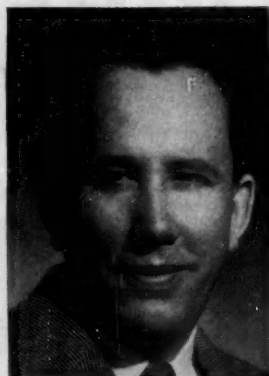
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HELPERS: Economist Ellis, researcher Carman, service man Call.

Buyers Gear for Tomorrow's Task

Responsible as they've never been before for the profit welfare of their companies, chemical purchasing agents are juggling schedules this week to squeeze out time for some of the most vital meetings ever held by the Chemical and Allied Products Buyers' Group of the National Assn. of Purchasing Agents.

With labor and raw material costs still moving up unchecked, management is demanding the last erg of effort from its procurement departments. Picking up the challenge, chemical purchasers, at duplicate meetings in Chicago (Jan. 24) and New York (Jan. 31) will get answers to such vexing current problems as:

- What can be done about escalator-clause contracts?
- Can value analysis really help chemical buying?
- How to handle chemical specifications.
- Is U.S. chemical industry adoption of the metric system worth it?
- What's a tried-and-true way to go about buying a new chemical?

Suppliers now facing a spate of higher production expenses are more and more pressuring customers to take escalator-clause contracts. Contending that increasing use of this provision is one of the most dangerous developments in the economy, Du Pont economist Ira Ellis will tell sessiongoers how to argue against its use by exploring escalation's tendency to stimulate inflation, undermine cost control. Agents will learn what escalation risk restriction, tie-ins with government indices, and other steps can accomplish.

To the case for restrained use of escalation, a strong call for more value analysis will be added. Its captain: Monsanto's purchasing and research planning director, J. R. Sayers. Although widely used in the mechanical industries, chemical application has lagged. Purchasing research, Sayers will show, can do as much for chemicals as it has for hard goods.

Rounding out the morning program: a view of "Long Term Cost Trends" by technical and economic consultant Roger Williams, Jr.

Spec's Can Save: Coordination of research, production, control and purchasing is essential in setting up optimum, dividend-boosting specifications. But it's easier said than done. By carefully delineating all spec problems, a selected panel* aims to produce workable answers.

Metric for Moderns: Despite the best of specs, the finest value analysis, the yield of purchasing profit, often isn't 100%. One reason: the tremendous headache and chance of error inherent in converting metric measurements of research into the British system used by sales and production. Hoping to galvanize action, Ara Call, manager of product control for the Western Condensing Co., will champion the cause of metric system adoption, suggest to attenders how they can educate others in the advantages of

*Includes: Elmer Schafer (director of control, Hoffmann-La Roche, Inc.), moderator; Paul Carman (executive director of research and product development, S. E. Massengill Co.); Frank Messmann (director of manufacturing, Wm. S. Merrell Co.); Wayne Hilly (assistant manager, analytical control department, Eli Lilly and Co.); Claire Brisette (manager of drug and chemical purchases, Parke, Davis & Co.); Stephan Urban (director of purchases, E. R. Squibb & Sons).



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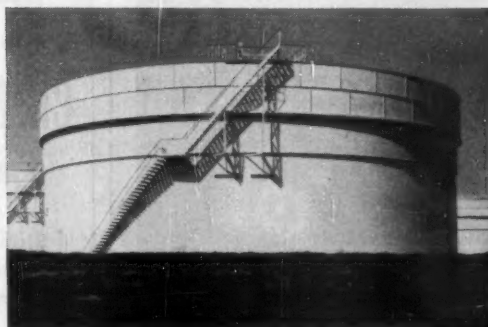
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The Company has entered into loan agreements, negotiated by the undersigned, under which it has borrowed \$5,000,000 and has the right to borrow the balance prior to December 18, 1956.

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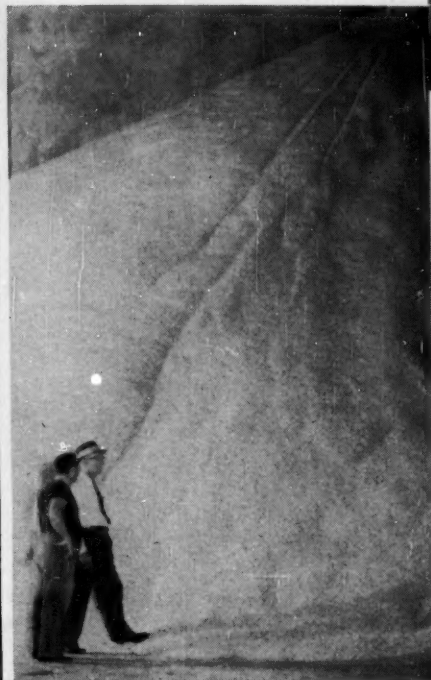
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metric measures, thus hasten widespread use.

Handy Tips: The chemical buyer can always use new tricks. And that's the purpose of a "Case Study in Chemical Buying" panel.[†] They'll present "facts" about a theoretical chemical;

[†] Includes: purchasing agents John McKinney (Du Pont), Norman Stiles (Chemstrand), and Joseph Saville (American Viscose Corp.).



TRUCKING TUNNELS: Underneath the

Mighty Bins for Salt Mountains

In Chicago, a huge tent-like affair on Goose Island is receiving a lot of attention these days because of its unique appearance. The 70-ft.-high building, constructed primarily of timber and reinforced concrete, is a unique new warehouse for storing International Salt Co.'s (Chicago) bulk salt.

Functionally designed, the warehouse's sharply pitched roof matches the 32° angle of repose of the average salt pile. For loading, a conveyor system takes salt from nearby boats or railroad hopper cars, carries it to a shuttle conveyor situated just beneath and parallel to the 178-ft.-long ridge-

the audience will then develop the buying plan. It's a rare spectator who doesn't pick up something of use in this type of session.

The burden of profit production increasingly rests on purchasing—agents must step up skill. Escalation and specification control, value analysis, and others can assist, are tools no buyer can afford to do without much longer.

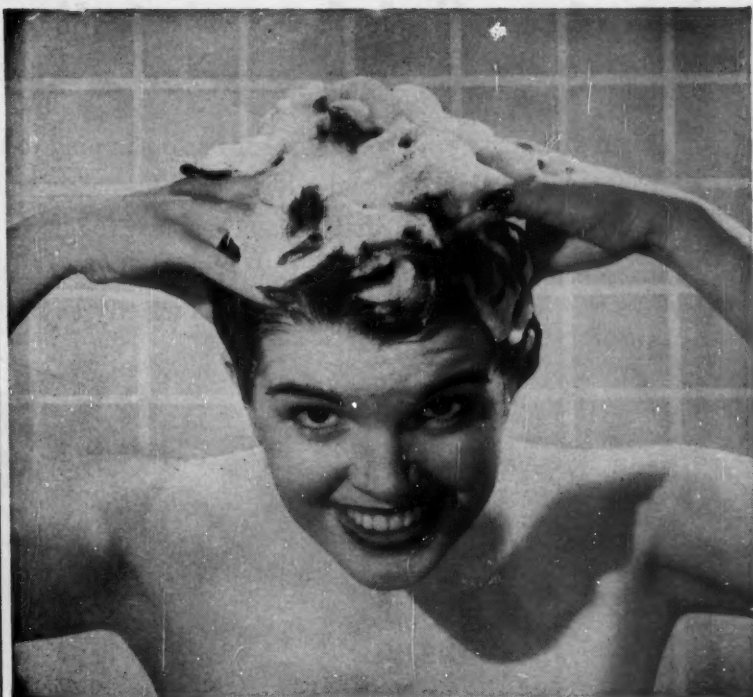


warehouse, gravity feed empties . . .

pole. This in turn distributes the salt evenly throughout the building's 10 bins.

For unloading, the building has yet another functional feature. Running the length of the building on ground level is a 32-ft.-wide tunnel built of reinforced concrete and heavy timbers in the shape of a series of arches. Trucks go through the tunnel to pick up the salt, which is delivered by gravity through openings in the tunnel walls.

International Salt will store its bulk rock salt (up to 21,150 tons) in the building to tide over seasonal slumps. When demand is high, in the winter time, the functional design is intended to make for fast, economical delivery combined with maximum safety. The company began using the facilities in the middle of December.



Prevents soap scum ... Cures it too

Where precipitates of calcium and magnesium salts are a problem, Glyco's ethylenediamine tetraacetic acid (EDTA) and salts act both to *prevent* all curd, scum and haze formation, and to *dissolve it* if already present. The effectiveness of Glyco's EDTA as a sequestering and chelating agent has been *proved* in years of use by the textile, soap and detergent, cosmetic and other industries.

Glyco's EDTA and salts — the TETRINE®S — are the purest forms available commercially, from a new plant specially designed to make these products. Plant — products — personnel — all are geared to elimination of your contaminant troubles. Send for samples and our catalog *The TETRINE®S*.

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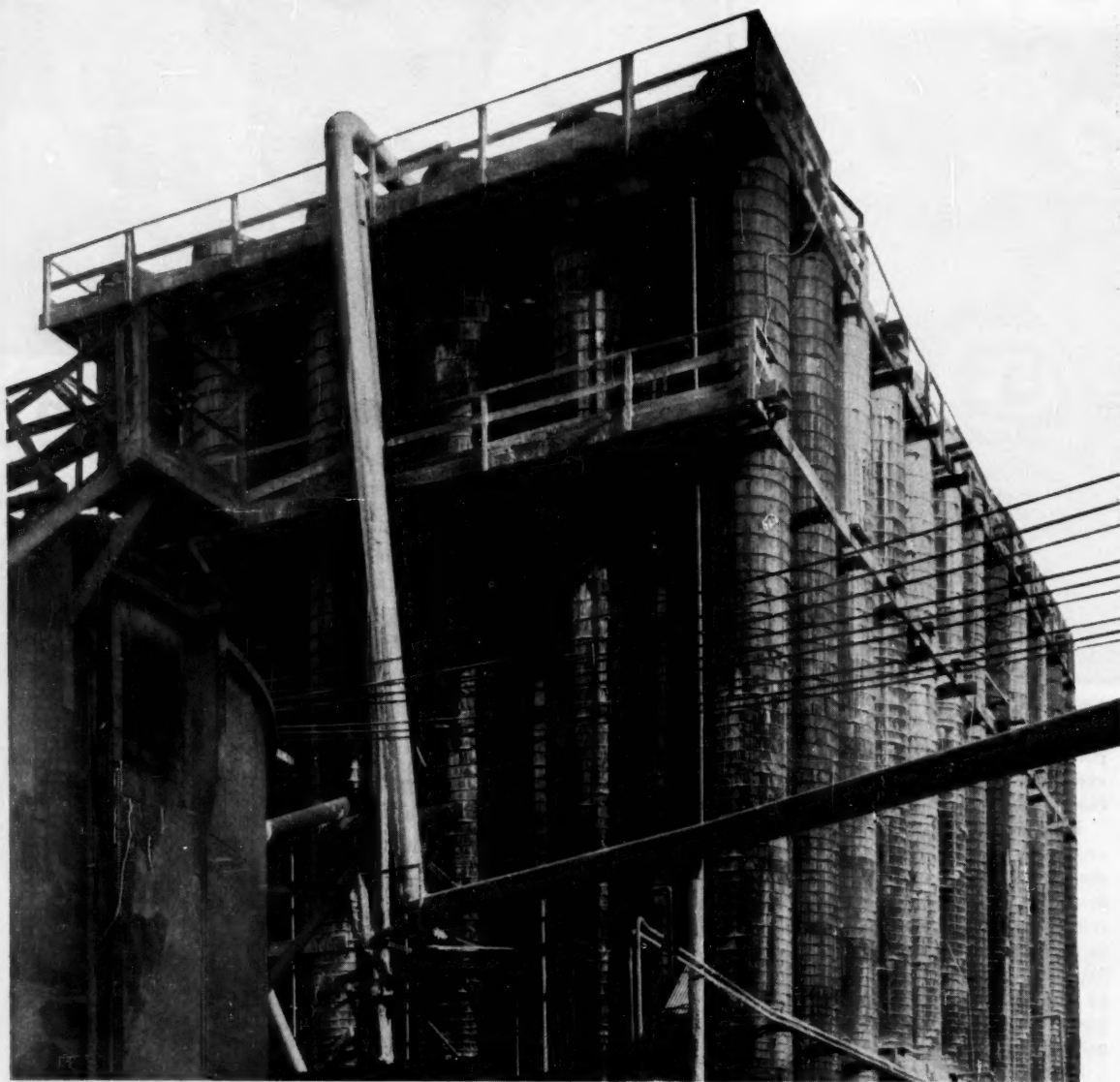
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Market Newsletter

CHEMICAL WEEK
January 7, 1956

Will the higher prices that went into effect earlier this week slow last quarter's generally brisk movement of chemicals? Apparently not—at least during the first quarter. A large volume of shipments is ready to move as a result of preholiday-placed orders.

Most producers who tacked on raises did so in the firm conviction that consumers wouldn't balk. Chief reason: chemical buyers anticipate no difficulty in passing on the increases in today's over-all bustling economy.

That happy condition is further exemplified in a just-out report on the liquefied petroleum gas industry. The rundown by George Benz, Paul Tucker and W. F. DeVoe is the 28th annual report prepared by Phillips Petroleum experts.

Thumbnail sketch of the LP-gas business:

- Total sales this past year increased by nearly 880.5 million gal. to check out a record 6 billion gal. plus.
- Chemical manufacturing use of LP-gas even outstripped the upswing in the chemical industry by jumping 20.2% (over '54 sales) for a total of 1,262 million gal.
- Biggest single category increase, 56.3%, is in synthetic rubber consumption of the gas. Under stimulus of private ownership and record auto production, reports Phillips, synthetic rubber consumed about 481 million gal. in '55.

Domestic (chiefly house-heating) and motor fuel, gas manufacturing, and industrial and miscellaneous used these respective portions of the 6 billion gal. sold: 15.3%; 10.9%; 7.3%.

The sulfur industry, too, is rolling along in high gear. Output during '55 stepped up some 250,000 tons over the previous year to an estimated 6.9 million long tons. Domestic consumption plus exports rose 400,000 tons to about 7.1 million in the same period, according to Freeport Sulphur's President Langbourne Williams.

Breakdown of U. S. sulfur production by source: from Frasch mines, an estimated 5.7 million tons, compared with '54's 5.5 million; sulfur recovered from gases, 390,000 tons; from pyrites, 400,000; and, in various forms, from other sources, 410,000 tons.

A major expansion in the use of titanium mill products in 1956 is said to be assured because of production orders for military aircraft placed by the Air Force in the fourth quarter of 1955.

The 1955 titanium mill product output of almost 2,000 tons, observes Rem-Cru Titanium's President C. I. Bradford, was about 1,200 tons higher than in '54, and a comparable expansion is forecast for '56.

Titanium sponge manufacture has expanded greatly with the help of government contracts for new plants; production, for the past two years, has run well ahead of demand; and a large tonnage of sponge has been delivered to the government stockpile. These developments, says Bradford, will preclude any shortage of basic material for producing titanium mill products during '56.

A boost for beryllium is the Atomic Energy Commission's invitation to private industry for bids on "reactor-grade" metal. The order: up to a sizable 100,000 lbs./year for the next five years.

Market Newsletter

(Continued)

One producer's price reduction of polyvinyl acetate emulsion is creating no willingness to follow suit among other makers. The cut— $1\frac{1}{2}$ ¢/lb. in all quantities, by Colton Chemical—is attributed to increased production. Other makers report that the move will not affect their prices, which remain at 17¢/lb. for tank cars, 19¢/lb. in drums.

Contract customers now join spot buyers in paying higher prices for two sulfur compounds—a $\frac{1}{4}$ ¢/lb. increase on sulfur monochloride and sulfur chloride yellow.

Quotes for both materials are: tank cars, $3\frac{3}{4}$ ¢/lb.; c.l. and l.c.l., 4¢ and $4\frac{3}{4}$ ¢/lb., respectively. All prices are f.o.b. plant, freight equalized.

A new price schedule posted by Barrett Division reflects some changes on some—but not all—Plaskon coating resins.

Across-the-board increases, ranging from $\frac{1}{4}$ to $\frac{1}{2}$ ¢/lb., affect the modified phenolics and maleic resins. Carload prices for the former range from 21¢ to $22\frac{1}{4}$ ¢/lb.; for the latter, 21¢ to 22¢/lb.

Other coating resins, e.g., pure alkyds, modified alkyds, styrenated alkyds, ureas and melamines, ester gums, and pure phenolics, remain unchanged.

The probability of an ammonia surfeit within the next couple of years is emphasized—with clocklike regularity—by every new producer that comes onstream.

Latest arrival on the active production list is by Escambia Bay Chemical (Pensacola, Fla.), whose unit, when operating at full capacity, will deliver 250 tons/day.

In addition to ammonia, the plant will be able to turn out 220 tons/day of nitric acid and 300 tons/day of ammonium nitrate.

Calcium chloride demand is bound to remain high, keep a pinch on supplies, if December's cold weather persists throughout the winter.

Up in Syracuse, N. Y., for example, extremely cold weather has necessitated the addition of calcium chloride to salt used for de-icing streets. Salt alone, it's reported, is unreliable during subzero weather; but calcium chloride attracts moisture, makes "wet" snow from "dry" snow, helps salt do its job.

SELECTED CHEMICAL MARKET PRICE CHANGES—Week Ending January 2, 1956

UP

	Change	New Price
Dimethyl malonate, dms.	\$ 0.03	\$ 0.80
Isobutyl acetate, solvent grade, tks.	0.005	0.1175
Isobutyl alcohol, tks., dlvd.	0.005	0.125
Methyl ethyl ketone, tks., dlvd.	0.005	0.115

DOWN

Lithium carbonate, tech., l.c.l.	\$ 0.03	\$ 0.87
Lithium hydroxide, dms., c.l.	0.10	0.80
Methyl ethyl pyridine, l.c.l., f.o.b. W. Va.	0.03	0.45

All prices per pound unless quantity is stated.

THE SWITCH IS TO... DAVISON SILICA GEL FOR DRYING NATURAL GAS

Actual use tests have proven to many that Davison Silica Gel is the efficient, economical way to dry natural gas.

Davison Silica Gel gives you a high capacity for moisture even at elevated temperatures (110-120°F.). It is economical to use because it requires fewer reactivations and gives longer life due to its resistance to fouling and attrition. Davison Silica Gel dries a wide variety of gas feeds to extremely low dew points. It is one of the most efficient adsorbents known for hydrocarbon recovery.

Investigate Davison Silica Gel for drying natural gas. Your Davison Field Service Engineer will be glad to give you all the details or write for complete technical data on drying of natural gas contained in Davison Bulletin No. 201.

D
Progress Through Chemistry

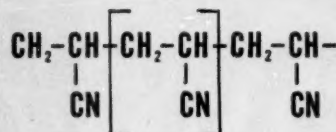
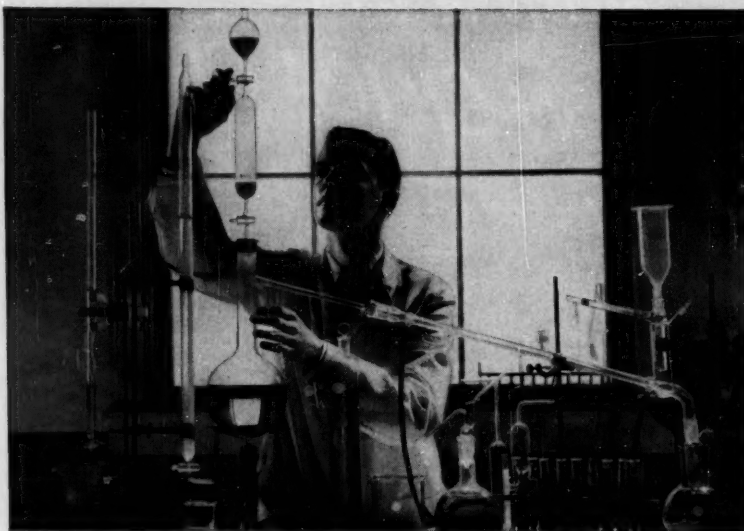
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Life ...on the Chemical Newsfront



POLYACRYLONITRILE, ANOTHER NEW CHEMICAL, offers some interesting properties you may find worth-while evaluating. It is a white, free-flowing powder of extremely fine and uniform particle size, with a molecular weight of 130,000. Relatively heat stable, it is hard and is a good insulator. Polyacrylonitrile is insoluble in most solvents except highly active ones such as dimethylformamide, 8-butyrolactone, and ethylene carbonate. Although considered inert, polyacrylonitrile may be altered by modification of the nitrile groups through such reactions as hydrolysis or hydrogenation. If you see possibilities in polyacrylonitrile, let us send you a sample. (New Product Development Department, Section C)

Chemistry makes news in Cosmetics



NEW SHAMPOO FORMULATIONS that clean without depleting the scalp and hair of their natural oils can be compounded with Cyanamid's new AEROSOL® 22 Surface Active Agent. Detergency tests of AEROSOL 22 on wool show high removal of soil and low removal of oil. Additions of up to 20% of AEROSOL 22 to liquid detergents, such as triethanolamine lauryl sulfate and nonyl phenoethylene oxide condensates, reduce their drying or defatting action on the skin. A new bulletin on AEROSOL 22, containing suggested formulations and describing other applications, will be sent on request. (Industrial Chemicals Division, Dept. C)



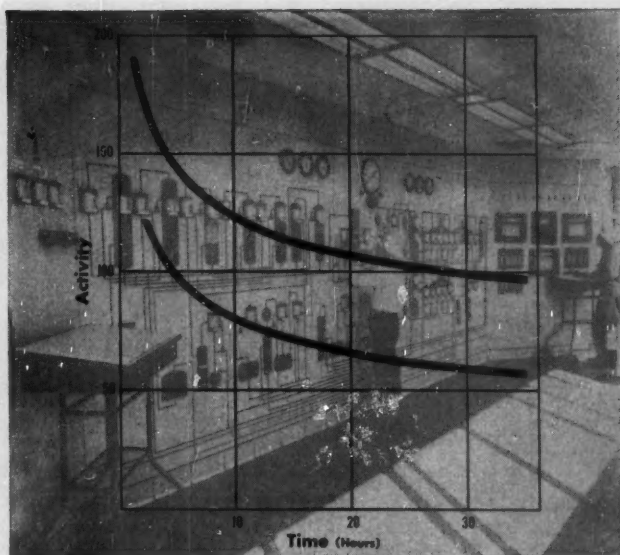
THE FIRST PLASTIC AEROSOL DISPENSER is making news in the toiletries industry. Developed by Colt's Manufacturing Company, Hartford, Conn., in collaboration with Cyanamid, it is molded of Melamine Molding Compound 1077. Melamine allows precision molding to close tolerances with the necessary stability to hold its dimensions under pressure. The spray package is rigid, break resistant, corrosion resistant, light, convenient to fill and ship. It offers unusual design possibilities in any color. Only nonplastic component is a stainless steel spring activating the collet. (Plastics and Resins Division)



FEEDING OF AUREOMYCIN® Chlortetracycline to lambs and beef cattle from start to market helps prevent disease, produces healthier animals and promotes faster weight gains. Five years of extensive research at experimental stations shows that AUREOMYCIN Chlortetracycline lowers the incidence of disease, as well as mortality and morbidity. Two new AUROFAC® feed supplements, containing 1.8 milligrams of AUREOMYCIN Chlortetracycline, are being introduced through feed manufacturers to improve feeding programs. (Fine Chemicals Division)



GOOD PLASTICITY IS ACHIEVED in natural rubber with PEPTON® 65 Plasticizer, which permits mastication at low temperature. This newest addition to Cyanamid's extensive line of rubber chemicals allows a reduction of as much as 30% in the milling cycle while still imparting the desired plasticity. And where the milling cycle is held constant, the viscosity of the rubber is substantially reduced—an important performance feature in processing soft rubber for products such as blown sponge. (Organic Chemicals Division)



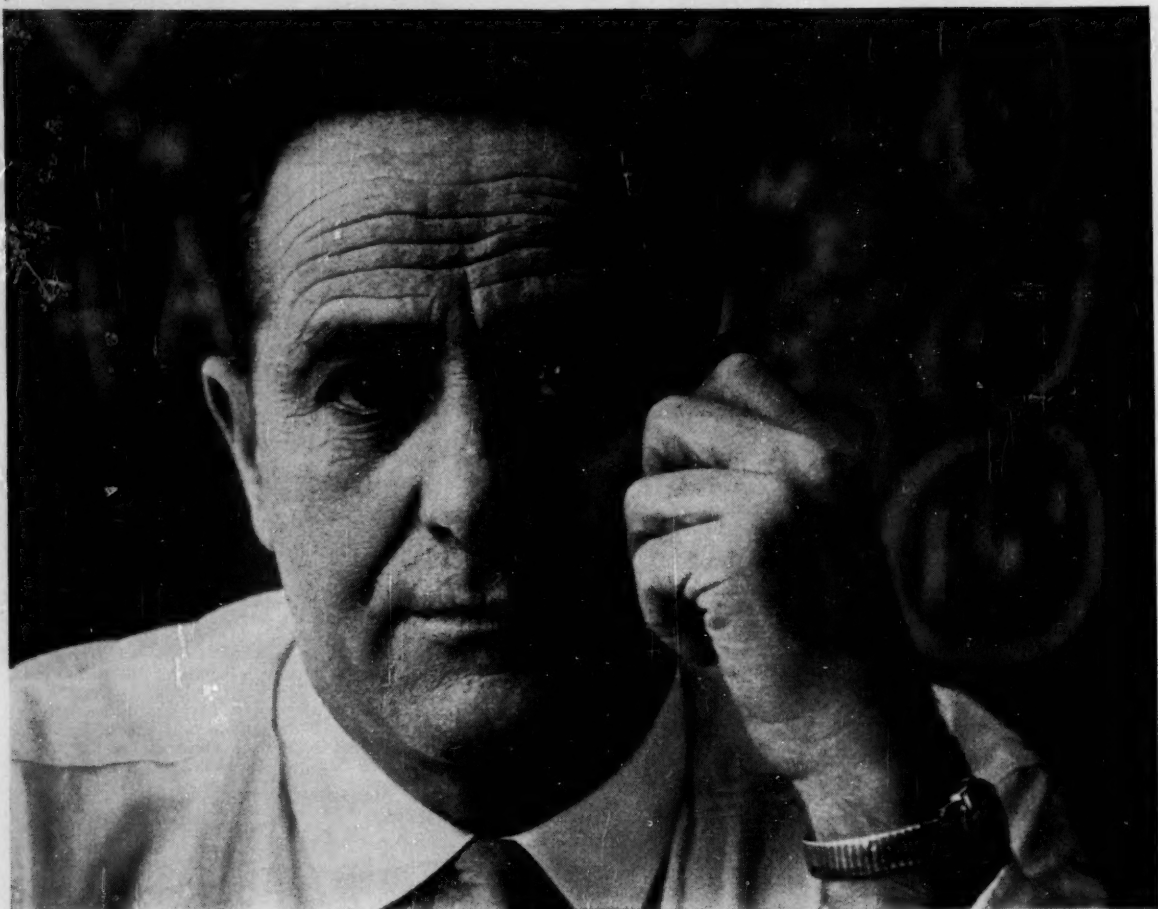
THIRTY-FIVE HOURS IN THE LIFE of two gasoline refining catalysts, tested at 1500° F under 1 atmosphere of steam, are charted above. The graph shows the greater thermal and steam stability of Cyanamid's new Hi PV® Catalysts (upper curve) over a catalyst in current use (lower curve). By increasing pore volume, in careful balance with pore diameter and specific surface, Cyanamid has given AEROCAT® Fluid Cracking Catalysts activity that stays high longer under conditions of refinery operation. Activity maintenance means high efficiency in gasoline production. Extensive experience with Hi PV Catalyst in refining units has demonstrated commercially these performance characteristics. (Industrial Chemicals Division, Dept. C)

*Trade-mark



Building for the Future Through Chemistry

Additional information may be obtained regarding these products by writing on your business letterhead to the Division of American Cyanamid Company, 30 Rockefeller Plaza, New York 20, N.Y., indicated in the captions.

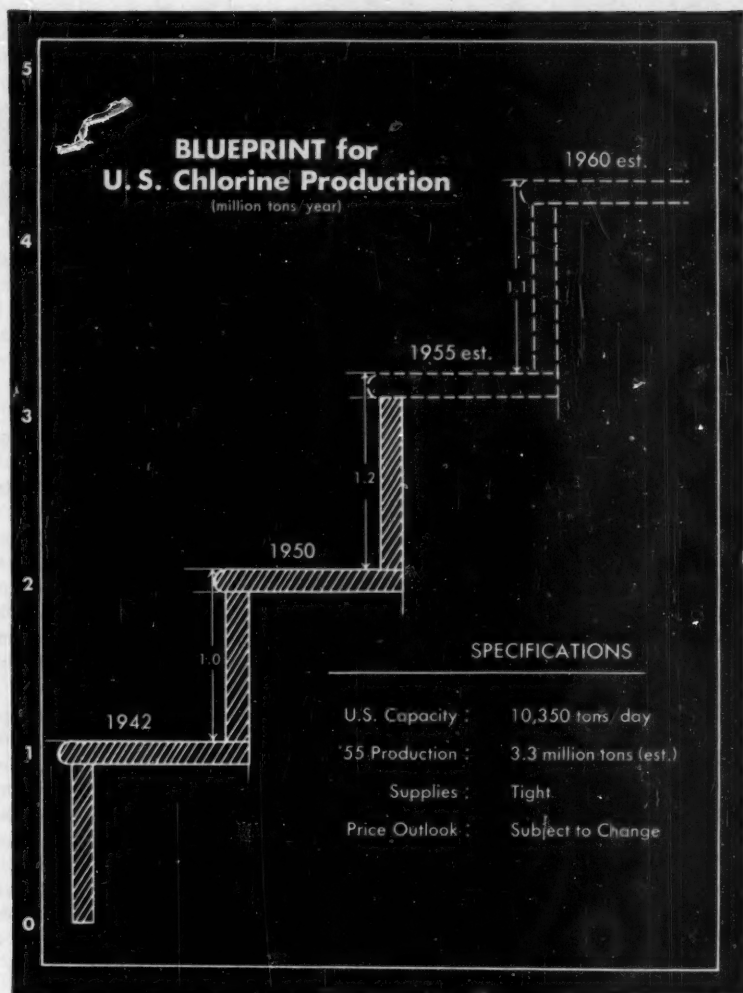


The Glycol Diethers bring out the best in our Mr. Rinelli...profit by it

Around Ansul we seldom see the *businessman* half of Bill Rinelli. He is usually so busy being Director of our Market Research and Development Division that this particular talent rarely comes to the fore. Some of our customers know differently. When working on a glycol diether application problem, Bill almost always wears two hats, *businessman* and *chemist*. He has helped to develop a number of marketable and highly profitable products using the glycol diethers. Examine these solvents carefully, then decide which Bill Rinelli you can use—businessman or chemist, or both. Write directly to him. Be sure to ask for a copy of our Glycol Diether Technical Bulletin. THE ANSUL CHEMICAL COMPANY, DEPT. C-11, MARINETTE, WISCONSIN.

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121	Dimethyl Ether of Ethylene Glycol $\text{CH}_3\text{OCH}_2\text{CH}_2\text{OCH}_3$ (1, 2 Dimethoxy, Ethane)
141	Diethylene Glycol Dimethyl Ether $\text{CH}_3(\text{OCH}_2\text{CH}_2)_2\text{OCH}_3$
161	Triethylene Glycol Dimethyl Ether $\text{CH}_3(\text{OCH}_2\text{CH}_2)_3\text{OCH}_3$
181	Tetraethylene Glycol Dimethyl Ether $\text{CH}_3(\text{OCH}_2\text{CH}_2)_4\text{CH}_3$ (Dimethoxy Tetraethylene Glycol)
222	Ethylene Glycol Diethyl Ether $\text{C}_2\text{H}_5\text{OCH}_2\text{CH}_2\text{OC}_2\text{H}_5$





Steps in the Right Direction

It's almost certain that chlorine history will repeat itself in the next half-decade, send output soaring into the 4-million-tons/year region. This would more than match the last million-ton advance that pushed '55 production well past 3 million tons/year. Regular chlorine makers, however, aver that demand will grow fast enough to keep all producers busy.

Many new plants and expansions, now on the way, will make chlorine wholly or partly for captive uses, but established chlorine merchants curiously enough profess little concern about conversion of one-time customers into manufacturers.

For example, outside the pale of the regular chemical industry is Weyerhaeuser Timber (Longview, Wash.)—long a chlorine buyer—whose well-publicized unit, now under construction, will deliver 100 tons/day of gas for the firm's pulp and paper operations.

In the chemical industry proper, General Aniline & Film will throw the switch in its 50-tons/day installation at Linden, N.J., sometime this quarter. The entire chlorine output will be used "for diverse needs of the company."

Still in the planning stage is Du Pont's Antioch, Calif., sodium and chlorine plant. The unit is timetabled

for completion in the third quarter of '57. Its capacity is not divulged, but the chlorine will be used to make ethyl chloride, trichlorethylene, and perchlorethylene. Operations will be integrated closely with a tetraethyl lead plant now under construction, and no chlorine will be sold to other users.

Marketable chlorine, however, will come from the Solvay Process plant (Brunswick, Ga.), due onstream late in '56. Most of the output will be sold to pulp, paper and textile mills in that area.

Two plant expansions by Columbia-Southern (at Lake Charles, La., and Barberton, O.) will increase output by 50 tons/day in each unit. Onstream dates are, respectively, June and December '56. The chlorine will be partly for sale, partly for captive use.

Also, two subsidiaries of Union Chemicals and Materials—Frontier Chemical and Consumers Co.—are expanding chlorine facilities. Frontier's 120-tons/day capacity increase will be ready within two months, will supply chlorine primarily for market.

To make or Not to Make? That is the question heard frequently among chlorine users, especially in the pulp and paper business. Right now, in fact, about 25% of all U.S. chlorine plants are captive installations of the pulp and paper industry; and there are indications that more of these firms are evaluating the pros and cons of integrating chlorine production with pulp processing operations.

Some market observers foresee a significant broadening of chlorine production in this field, but spokesmen for the chlorine industry maintain that several factors deter production by all but a relatively small number of pulpers.

One reason: plant costs are very high, average about \$120,000 for each ton/day of capacity. The need of such a capital investment discourages many would-be producers.

The disposition of caustic is another problem. If a manufacturer is unable to consume all the caustic produced as a by-product of his chlorine operations, he must find markets for it. This frequently is not easy.

Finally, by-product hydrogen preferably should not be wasted. Although the manufacture of ammonia might be one answer, not enough hydrogen is

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MARKETS

produced in a small chlorine plant to warrant such utilization. (At least 10-tons/day chlorine capacity is needed to provide one ton of ammonia.) Furthermore, with ammonia plants mushrooming all over the country, many marketers are already wondering when the saturation point for this product will be reached.

Dioxide Threat: Of greater concern than the pulp industry's own chlorine production is the potential competition from chlorine dioxide.*

Chlorine dioxide has already largely replaced sulfur dioxide as the final bleach in the kraft process. But at least a partial replacement of hypochlorite—which is used in several preceding bleach steps—is also foreseen.

Right now, however, both chlorine producers and chlorine dioxide makers maintain that the uses of the two materials in pulp processing do not overlap very much. This view helps explain the tranquil atmosphere that now prevails in Vancouver despite the simultaneous construction there of a chlorine plant by Hooker Electrochemical and a chlorate plant by Electric Reduction.

Something else to think about are the far-reaching effects that coming changes in automotive engine design portend. If, as some predict, turbine car engines become widely accepted (*CW*, Nov. 12, '55, p. 95) and piston engines head for obsolescence, the tetraethyl lead market will be in for trouble. This, of course, means that a large chlorine outlet will also be hit.

However, ample warning precedes the automotive revolution—the change will probably take place, if at all, slowly enough to soften the impact on the chemical industries concerned.

Cell Stretch: Present U.S. chlorine capacity is close to 10,350 tons/day, but actual production has fallen somewhat short of this figure. In Sept. '55, for example, the daily output was 9,800 tons—a record high for the industry.

The need of cell repairs, of course, keeps a small part of the existing equipment out of operation. Too, the total capacity figure includes inactive units such as the 100-tons/day plant near Denver, which was built by the Chemical Corps. This plant was not in operation in '55, but nonetheless

represents available capacity.

One factor not generally recognized enters the picture when total capacities are calculated. Estimates are naturally made on the basis of rated individual cell capacities, but it is often possible to increase output to at least 5% above these values.

Thus a producer can, in many instances, increase his chlorine output by merely upping cell amperage over the normal rating. This practice will lead to more rapid deterioration of the cell, of course, and will necessitate more frequent reconditioning. But if a firm makes its own current, or can buy it easily, boosting of cell capacities is cheaper than installing more cells.

Obviously, it would be virtually impossible to learn how many chlorine makers now hike production in this manner, or how many, at any rate, may do so in the future. That such a practical method can be used to increase cell capacities means, first, that normal capacity summations do not represent the maximum attainable with existing equipment; and second, that total U.S. production could be stretched easily and quickly.

A breakdown of chlorine consumption into an end-use pattern is, admittedly, very difficult; the multiplicity of chlorine products makes it a formidable task. Duplication of statistical data is an ever-present hazard, since chlorine in chemical intermediates often reappears in wholly different compounds. Finally, a considerable portion of all chlorine is used as a "tool" in chemical synthesis, doesn't show up in the final product.

It's safe to say, however, that the pulp and paper industry is the No. 1 consumer, takes about 14% of all chlorine used in this country. Solvents (carbon tetrachloride, trichlorethylene, perchlorethylene) collectively account for about 17% of the total. Others: ethylene oxide, and propylene and ethylene glycols, 11%; monochlorobenzene, 7%; vinyl chloride, 6%; tetraethyl lead antiknock fluids, 5%; water and sewage treatment, 3%. Fully a third of all chlorine consumed is untraceable for reasons mentioned above.

It's evident that the chlorine industry, with its host of outlets, doesn't have to worry too much, even if a few trouble spots appear. On the whole, chlorine's next million-ton production step-up should be an easy one.

*Chlorine dioxide, not derived directly from chlorine, is made *in situ* from sodium chlorate, the chemical actually sold by "chlorine dioxide" producers.

BROMIDES *for chemical processing*

Hydrobromic Acid

A NEW, MODERN PLANT with new exacting controls and increased capacity is now producing Hydrobromic Acid at Michigan Chemical Corporation. Greater demand for this product as a brominating agent and for the manufacture of other bromides made this expansion necessary.

Why use HBr? Because bromide intermediates, made with Hydrobromic Acid, often provide a higher yield of finished products and more economical production.

USES: Bromides, intermediates, dyes, drugs, perfumes, sedatives, photographic emulsions.

Michigan Chemical Corporation, for almost twenty years a quality producer of chemicals, offers a series of pure bromides, among them being Ethyl Bromide, Monobromobenzene, Cyclopentyl Bromide and Hydrobromic Acid, specially made for use in pharmaceutical manufacturing. Write for further information or catalog.



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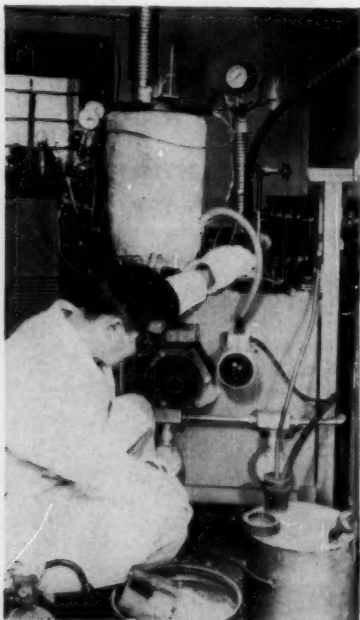
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Free-for-All in Dispersions

There are ways to make sodium dispersions and there are ways to make sodium dispersions—and everyone who makes sodium dispersions vows that his way is the best way. The introduction by Cowles Dissolver Co. (Cayuga, N.Y.) of a new dispersion maker is not likely to quickly alter this situation. But the machine is noteworthy because of the strong support it is getting from U.S. Industrial Chemicals.

U.S.I., like fellow sodium producers Ethyl Corp. and Du Pont, has much to gain from widespread acceptance of sodium dispersions in production work—and that, of course, calls for equipment† that can produce fine-particle dispersions quickly, with a minimum of maintenance. Right now, dispersion-making is primarily a laboratory operation, and new machines for the task are put to the test by the researchers who are investigating the advantages (e.g., higher yields, faster reaction, better control) of dispersions over bulk sodium.

†Sodium producers would rather sell sodium than sodium dispersions. Users, they aver, get maximum reactivity by making their own dispersions at the point of use.



PILOT DISPERSION MAKER: For sodium, a growing dimension.

Developed with the aid of U.S.I. researchers (*CW, Technology Newsletter, Dec. 17, '55*), the Cowles laboratory machine is said to yield 1-2 qts. of a 2-20 micron dispersion in 6-8 minutes. A saw-toothed stirrer disc, going at 4,000-5,000 rpm., causes a rapid motion of the suspension through itself, which shears the sodium down to size.

Advantages ascribed to the device by U.S.I.: easier to clean than other dispersion makers; yields more uniform products of smaller particle size. Because of sodium's unpredictable* behavior in organic reactions, these last two features are important attributes of any such apparatus.

Also in the Cowles device's favor is the fact that it is available as a complete package for dispersion-making. Machines to do the job are usually put together from regular lab apparatus, although a special cutting or milling tool is sometimes used. The package laboratory unit runs to about \$500 and a pilot-plant unit will be available for approximately \$850. Since production-scale utilization of dispersions is still largely a fond expectation of sodium producers, there is no plant-scale model on the shelf. But, depending upon size, cost would probably be from \$1,500.

Despite its claimed attributes and the firm endorsement by U.S.I., the Cowles machine will have an uphill fight to convince researchers who have arrived at their present way of dispersion-making after trying known methods—and that includes the Cowles saw-toothed stirrer disc—of doing the job.

Ethyl Corp., which has invested considerable effort in sodium-dispersion technology, finds Premier Mill's (Geneva, N.Y.) Dispersator most satisfactory. Essentially a vertically slotted stirring head, the Dispersator is today perhaps the most widely used sodium-dispersing tool.

U.S.I. uses it in a pilot-plant dispersion maker that the firm lends to interested investigators. Recently, a

unit utilizing the Cowles Dissolver, was also made available on loan from U.S.I. Interested researchers may borrow either of these units without any charge.

Egg Beater, Too: Other devices, too, are in use. Modified Waring Blenders, homogenizers, colloid mills and stirrers of various shapes all have their adherents. And there are those who claim that they could make a good dispersion with an egg beater, provided it could be "revved" up to 5,000 rpm. and higher. Still another viewpoint holds that a dispersing agent (e.g., oleic acid) is vital to a good dispersion (where the former does not interfere, seriously, with the subsequent reaction).

It's generally conceded, however, that the Cowles shearing head is less likely to clog, far easier to clean than the above machines. This, plus the convenience of a complete package of apparatus designed solely for dispersion-making, is likely to have strong appeal for pilot-planters and production men.

Right now, it's difficult to find many of the latter who have more than hearsay acquaintance with sodium dispersions. But a number of promising applications for these highly reactive products now appear to be in advanced stages of development. A commercial titanium process, utilizing dispersed sodium as the reducing agent, is probably not very far from realization.

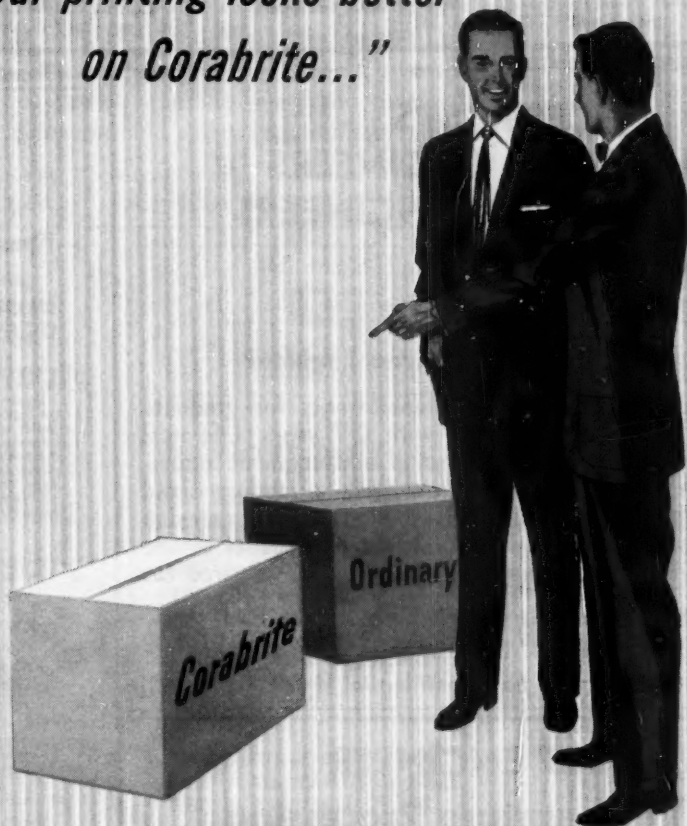
And it's a relatively safe bet that U.S.I. will rely on dispersions in its new isosebacic acid process. The company won't say yes or no, but it is known that finely divided sodium (average particle size: less than 50 microns) is the key (*CW, Dec. 10, '55, p. 60*) to high yields of the 10-carbon acids U.S.I. will obtain by dimerizing butadiene*.

Other promising new dispersion uses are known to be going over the research hurdles, although details are being zealously guarded by all concerned. Certainly, there's no dearth of possibilities for putting the extremely reactive metal to work. By promoting better dispersion makers, sodium producers are trying to make it easy for more researchers to get interested in their product.

*Treating the product with carbon dioxide.

*Reaction products are often a function of sodium particle size. Chlorobenzene and sodium, for instance, yield phenylsodium when particles are smaller than 25 microns. Diphenyl is produced when particles are larger.

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Fungi Fighters

U.S. Air Force rounded off five years of fungicide research this month by naming agents it has found best for staving off fungus-caused deterioration of textiles. The roster includes both antibiotics and aromatic fluorine compounds, significantly omits copper compounds.

Found to be effective: antibiotics endomycin, benzyl muchochlorate, rimocidin, comirin and netropsin sulfate; 2,2' - dihydroxy - 5,5' - difluorobiphenyl; 3,3' - difluoro - 4,4' - dihydroxybiphenyl; 2,2' - dihydroxy-3,3',5,5' - tetrafluorobiphenyl; 2,2'-dihydroxy - 5,5' - difluorodiphenyl sulfide.

Of the antibiotics, endomycin had preferred physical and chemical properties. Treated cloth, containing

0.76% endomycin, displayed high fungus resistance, held up at 100 C for one hour and resisted ten hours of ultra-violet light in a twin arc weatherometer.

While the highest fungicidal activity was found in mixed-halogen dinitrobenzenes (effective at 0.5% and below), these were deemed more toxic than the fluorine compounds named above. Most potent: 1-fluoro-3-bromo-, 1-fluoro-3-chloro-, and 1-fluoro-3-methyl-4,6-dinitrobenzenes.

Alton Prince and Sam Bakanauskas piloted the evaluation program at Wright Air Development Center (Dayton, O.). Initial screening was done under contract at the University of Rhode Island (antibiotics) and at the University of Illinois (fluorine compounds). Work at the latter institution was conducted by the Illinois State

Natural History and Geological Survey Divisions.

Flavonoids: A new method of purifying flavonoids—of interest in treating radiation injury—is spelled out in U.S. Pat. 2,681,907 (recently released for publication by the Atomic Energy Commission). Briefly, the technique involves treating a water extract of the flavonoid with a cation-exchange resin, eluting the flavonoid-containing resin with an organic solvent.

Lab Entry: To develop and test finishes and paints, Canadian Pittsburgh Industries, Ltd., has opened a new central laboratory at Long Branch, Ont. C.P.I.'s associate U.S. company maintains a research center at Springdale, Pa.

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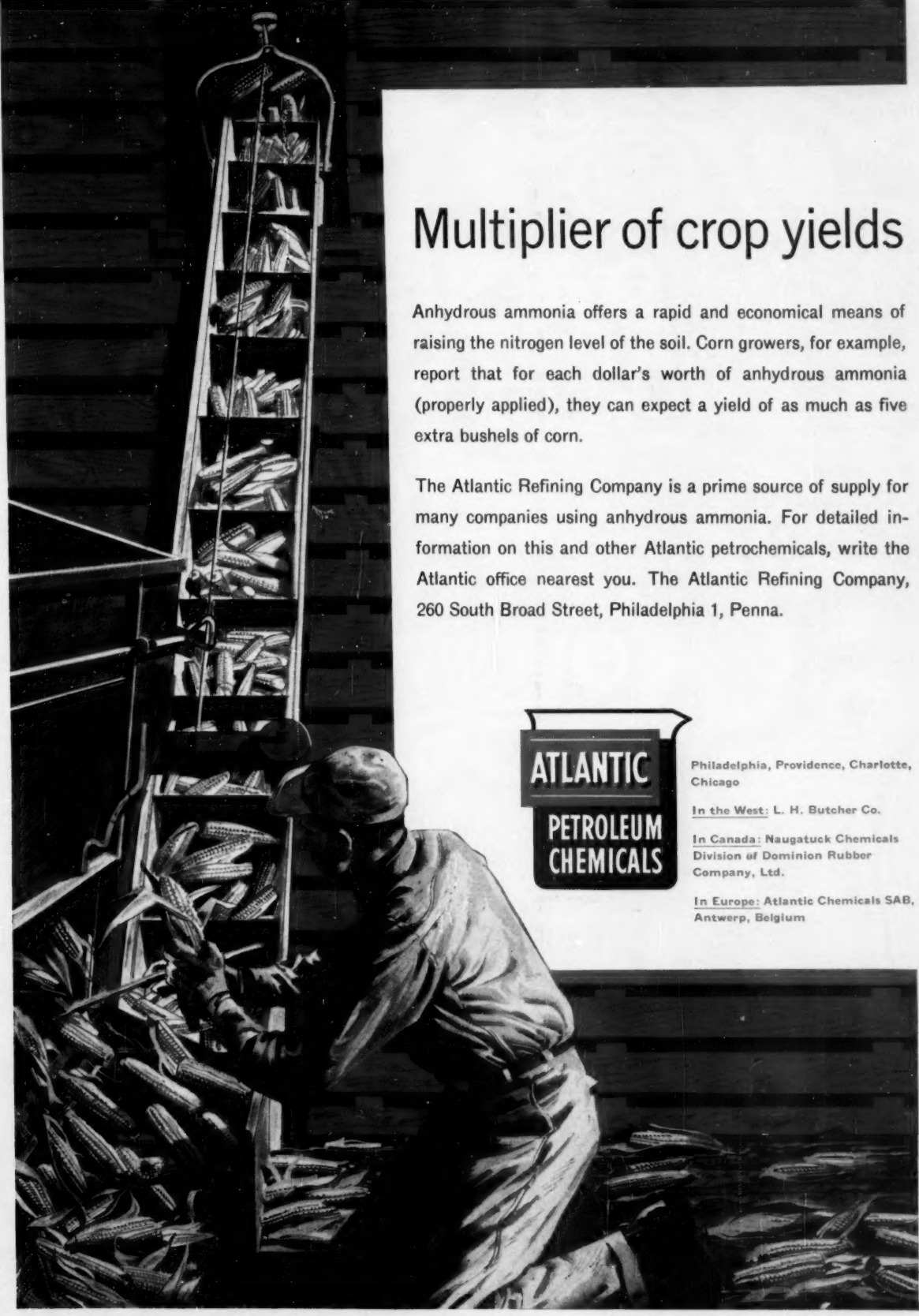
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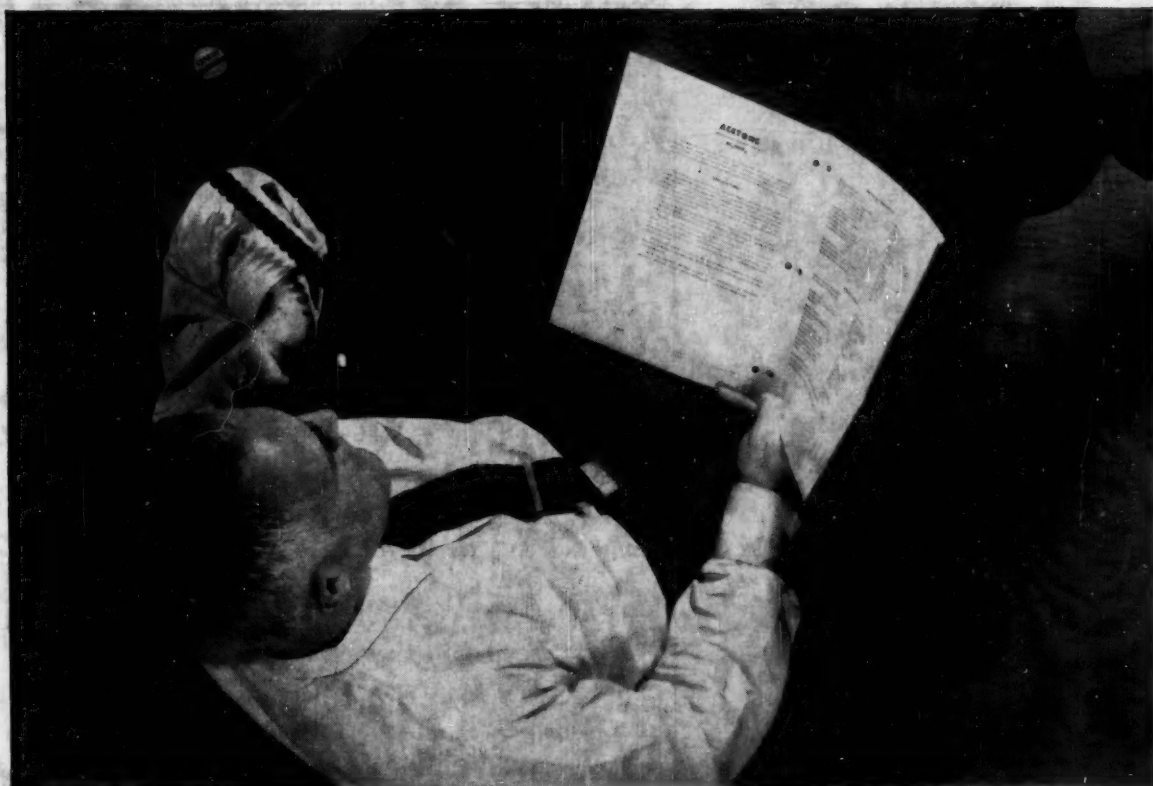
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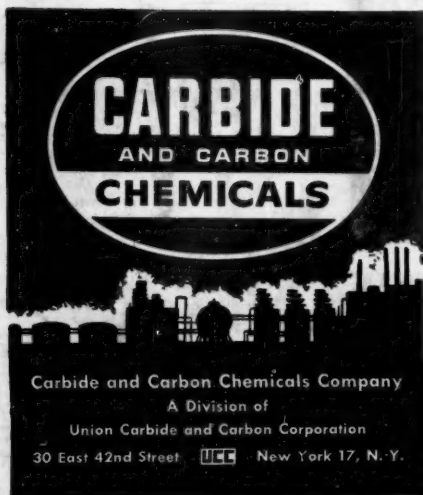
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